

THE RELATIONSHIP BETWEEN
TECHNICAL VOCABULARY BREADTH,
ENGLISH LANGUAGE PROFICIENCY, AND
VOCABULARY LEARNING STRATEGIES
AMONG ENGINEERING UNDERGRADUATES
AT UNIVERSITI MALAYSIA PAHANG

AMRI MUAZ BIN AZMIMURAD

Master of Science

UNIVERSITI MALAYSIA PAHANG



SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Master of Science.

(Supervisor's Signature)

Full Name : DR. NAJAH BINTI OSMAN

Position : SENIOR LECTURER

Date :



STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

(Student's Signature)

Full Name : AMRI MUAZ BIN AZMIMURAD

ID Number : MBC16002

Date :

THE RELATIONSHIP BETWEEN TECHNICAL VOCABULARY BREADTH,
ENGLISH LANGUAGE PROFICIENCY, AND VOCABULARY LEARNING
STRATEGIES AMONG ENGINEERING UNDERGRADUATES AT UNIVERSITI
MALAYSIA PAHANG

AMRI MUAZ BIN AZMIMURAD

Thesis submitted in fulfilment of the requirements
for the award of the degree of
Master of Science

Centre for Modern Languages
UNIVERSITI MALAYSIA PAHANG

NOVEMBER 2019

ACKNOWLEDGEMENTS

I would like to express my utmost appreciation to all those who provided me the possibilities to complete this research report. A special gratitude I give to my supervisor, Dr. Najah Osman whose contribution in stimulating suggestions and encouragement, helped me to coordinate my master's journey especially in writing this research report.

I would also like to acknowledge with much appreciation the crucial role of the staff of Centre for Modern Languages (CML), who gave the permission to use all required resources and the necessary materials to complete this research. A special thank goes to my research friend, Amir Ghazali who always helped me to get back to my research whenever I parted ways with my progress. I also would like to thank Victor Megong Jaki which has been more than a friend throughout this journey of conducting research. I would like to express my gratitude to my Postgraduate Association 2018 family especially my president, Muhammad Shabir Shaharudin in which his and other team members' help has made me a better researcher and student.

Last but not least, special thanks go to my father, Azmimurad Mat Kasim and my mother, Tuan Sharifah Hanim Tuan Dagang for endless support and encouragement throughout this topsy-turvy journey. I would like to thank my siblings for always being there to cheer me up whenever I reach the bottom of myself and always give me the joy I never thought I needed.

I have to appreciate the guidance and help given by other lecturers as well as the panels especially in my thesis presentation that has improved my research for a better and meaningful one.

ABSTRAK

English for Specific Purposes (ESP) dilaksanakan bertujuan untuk menarik minat atau membantu pelajar mempelajari Bahasa dalam disiplin tertentu. ESP melibatkan perkataan yang direka secara terperinci atau mempunyai maksud yang khusus dalam sesuatu bidang. Apabila pelajar kejuruteraan membaca teks yang mengandungi terma-terma teknikal yang mempunyai maksud yang khusus dalam bidang kejuruteraan, pengetahuan tatabahasa berkaitan terma-terma teknikal amatlah penting untuk memahami sesuatu teks. Walaubagaimanapun, pelajar kejuruteraan didapati menghadapi masalah apabila mereka berhadapan dengan teks yang mengandungi terma-terma teknikal. Maka, kajian ini bertujuan untuk mengkaji tahap tatabahasa teknikal dalam kalangan pelajar Universiti Malaysia Pahang. Kajian ini menggunakan metod gabungan penjelasan di mana ia bertujuan untuk menyelidiki hubungan antara tahap terma teknikal, strategi mempelajari tatabahasa dan gaya pembelajaran. Satu ujian tatabahasa digunakan iaitu ujian maksud perkataan dalam kajian ini bersama dengan satu soal selidik berkaitan strategi mempelajari tatabahasa dan suatu temu bual separuh berstruktur. Terma-terma teknikal tersebut di ambil daripada Engineering English Word List (EEWL). Ujian tersebut telah dijalankan terhadap 138 pelajar yang bermajorkan bidang kejuruteraan daripada 5 fakulti kejuruteraan yang sedang mengikuti pengajian tahun ketiga dan keempat di Universiti Malaysia Pahang. Kajian mendapati terdapat satu hubungan antara tahap tatabahasa teknikal dan tahap kemahiran bahasa. Kajian ini juga mendapati bahawa strategi paling kerap digunakan oleh pelajar kejuruteraan untuk mempelajari terma teknikal adalah dengan menonton and mendengar media Bahasa Inggeris. Kajian ini mencadangkan kajian yang lebih lanjut untuk dijalankan dalam membantu para pelajar untuk memperbaiki tahap tatabahasa mereka dalam terma-terma teknikal.

ABSTRACT

English for Specific Purposes (ESP) is designed to appeal to learners learning languages in specific disciplines. ESP deals with words that are designed precisely or has its own meaning in specific fields. As engineering students read texts with technical terms that have a specific meaning in the engineering field, the vocabulary knowledge of technical terms is important for them to comprehend the texts. However, engineering students were found to face problems whenever they encounter texts containing technical terms. Hence, this study aims to investigate the vocabulary breadth of technical vocabulary among engineering students at Universiti Malaysia Pahang. This study employs mixed method explanatory design which seeks to explore the relationship between technical vocabulary breadth, English language proficiency and vocabulary learning strategies. A vocabulary test which is a word meaning test is used in this research along with a vocabulary learning strategies questionnaire and a semi-structured interview. The technical terms were taken from the Engineering English Word List (EEWL). The test was administered to 138 students majoring in engineering from five engineering faculties in their third and fourth year at Universiti Malaysia Pahang. The findings showed that there was a moderate positive relationship was found between technical vocabulary breadth and language proficiency. It was also found that listening to and watching English media is the most preferred strategy to be used among engineering undergraduates in learning technical vocabulary. This study proves the issue in which university students, especially engineering students are facing problem with vocabulary mastery. The current research recommends further research to be done in helping the students to improve their vocabulary breadth on technical terms.

TABLE OF CONTENTS

TITLE PAGE	
ACKNOWLEDGEMENTS	ii
ABSTRAK	iii
ABSTRACT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	x
CHAPTER 1 INTRODUCTION	1
1.1 Introduction	1
1.2 Background of Research	2
1.3 Problem Statement	4
1.4 Research Objectives	5
1.5 Research Questions	5
1.6 Significance of Research	6
1.7 Scope of Research	7
1.8 Limitations of Research	7
1.9 Operational Definition	7
1.10 Summary	9
CHAPTER 2 LITERATURE REVIEW	10
2.1 Introduction	10
2.2 English for Specific Purposes (ESP)	10
2.2.1 Definition of ESP	10

2.2.2	ESP versus General English (GE)	11
2.2.3	Classification of ESP	12
2.3	Needs Analysis of ESP in Engineering Context	13
2.4	ESP Issues among Engineering Students	15
2.5	Effects of ESP on Learning Performances	17
2.6	The Importance of Vocabulary for Language Comprehension	18
2.7	Previous Studies on ESP	21
2.7.1	Vocabulary Knowledge (Breadth)	21
2.7.2	Technical Vocabulary Knowledge	25
2.7.3	Vocabulary Learning Strategies	27
2.8	Relationship between Vocabulary Knowledge and Language Proficiency	41
2.9	Relationship between Vocabulary Knowledge and Vocabulary Learning Strategies	43
2.10	Theoretical Framework	49
2.10.1	Explicit Vocabulary Learning Theory	49
2.10.2	Examination of Second Language Learning Framework	50
2.10.3	Conceptual Framework	52
2.11	Summary	54
 CHAPTER 3 METHODOLOGY		 55
3.1	Introduction	55
3.2	Research Design	55
3.2.1	Participants	56
3.3	Instruments	57
3.3.1	Technical Vocabulary Test	58
3.3.2	Vocabulary Learning Strategies Questionnaire (VLSQ)	59
3.3.3	Interview Protocol	59

3.4	Validity and Reliability	60
3.5	Data Collection Procedure	62
3.6	Ethical Considerations	63
	3.6.1 Informed Consent	63
	3.6.2 Voluntary Participation	63
	3.6.3 Confidentiality	64
3.7	Data Analysis	64
3.8	Summary	68
CHAPTER 4 RESULTS AND ANALYSIS		69
4.1	Introduction	69
4.2	Analysis of Quantitative Data	69
	4.2.1 Technical Vocabulary Breadth Among Engineering Undergraduates	69
	4.2.2 Technical Vocabulary Breadth According to Field of Study	69
	4.2.3 Technical Vocabulary Breadth According to MUET Scores	70
	4.2.4 Vocabulary Learning Strategies Among Engineering Undergraduates	71
	4.2.5 Vocabulary Learning Strategies According to Field of Study	73
	4.2.6 Vocabulary Learning Strategies According to MUET Scores	75
	4.2.7 Relationship between Technical Vocabulary Breadth and Vocabulary Learning Strategies	76
	4.2.8 Relationship between Technical Vocabulary Breadth and Language Proficiency	79
4.3	Analysis of Qualitative Data	81
	4.3.1 Analysis of Technical Vocabulary Breadth Among Engineering Undergraduates	81

4.3.2	Analysis of Vocabulary Learning Strategies in Learning Technical Vocabulary Among Engineering Undergraduates	83
4.4	Summary	85
CHAPTER 5 DISCUSSION AND CONCLUSION		86
5.1	Introduction	86
5.2	Discussion	86
5.2.1	The Relationship Between Technical Vocabulary Breadth and Vocabulary Learning Strategies Among Engineering Undergraduates	86
5.2.2	The Relationship Between Technical Vocabulary Breadth and English Language Proficiency Among Engineering Undergraduates	90
5.2.3	The Most and Least Frequently Used Strategies Among Engineering Undergraduates	92
5.3	Implication of Study	93
5.4	Recommendations for Further Study	95
5.5	Conclusion	97
REFERENCES		99
APPENDIX A TECHNICAL VOCABULARY TEST		112
APPENDIX B VOCABULARY LEARNING STRATEGIES QUESTIONNAIRE (VLSQ)		117
APPENDIX C INTERVIEW PROTOCOL		122
APPENDIX D ENGINEERING ENGLISH WORD LIST		126

LIST OF TABLES

Table 3.1	Demographic of participants according to the field of study	57
Table 3.2	Sufficiency of vocabulary breadth	64
Table 3.3	Level of vocabulary breadth	65
Table 3.4	Vocabulary learning strategies taxonomy	65
Table 3.5	Vocabulary learning strategies frequency	66
Table 3.6	Codes extracted from interview transcriptions	67
Table 3.7	Themes derived from interview codes	67
Table 4.1	Mean score for technical vocabulary breadth	69
Table 4.2	Mean score for technical vocabulary breadth according to the field of study	70
Table 4.3	Mean score for technical vocabulary breadth according to MUET scores	71
Table 4.4	Mean score for VLS among engineering undergraduates	71
Table 4.5	Mean score for ten most frequently used vocabulary learning strategies	72
Table 4.6	Mean score for ten least frequently used vocabulary learning strategies	73
Table 4.7	Mean score for VLS according to the field of study	74
Table 4.8	Mean score for VLS among all engineering majors	74
Table 4.9	Mean score for VLS according to MUET scores	76
Table 4.10	Pearson's correlation test score	76
Table 4.11	Pearson's correlation test score	77
Table 4.12	Pearson's correlation test score	78
Table 4.13	Pearson's correlation test score	79
Table 4.14	Pearson's correlation test score	80

LIST OF FIGURES

Figure 2.1	Incidental Vocabulary Learning Theory	49
Figure 2.2	Examination of Second Language Learning Framework	52
Figure 2.3	Research Framework	53

REFERENCES

- Abdullah, K. I., Puteh, F., Azizan, A. R., Hamdan, N. N., & Saude, S. (2013). Validation of a controlled productive Vocabulary Levels Test below the 2000-word level. *System, 41*(2), 352–364.
- Abmanan, N. A., Azizan, N., Fatima, N., & Mohd, W. (2017). Receptive and Productive Vocabulary Level of Diploma Students from a Public University in Malaysia. *J. Appl. Environ. Biol. Sci, 7*(1S), 53–59.
- Adegbija, M. V., & Bola, O. O. (2015). Perception of Undergraduates on the Adoption of Mobile Technologies for Learning in Selected Universities in Kwara state, Nigeria. *Procedia - Social and Behavioral Sciences, 176*, 352–356.
- Ahmad, H., Yunus, M. M., & Hasan, N. H. (2016). English Vocabulary Size and Vocabulary Learning Strategies of UiTM Pre- Diploma Students. In *International Conference on Language, Education, Humanities and Innovation* (pp. 150–170).
- Akbarian, I. (2010). The relationship between vocabulary size and depth for ESP/EAP learners. *System, 38*(3), 391–401.
- Alavi, S. M., & Akbarian, I. (2012). The role of vocabulary size in predicting performance on TOEFL reading item types. *System, 40*(3), 376–385.
- Ansari, M. (2016). The Relationship Between the Use of Vocabulary Learning Strategies and Gender of Iranian EFL Learners, 88–100.
- Ansarin, A. A., Zohrabi, M., & Zeynali, S. (2012). Language learning strategies and vocabulary size of Iranian EFL learners. *Theory and Practice in Language Studies, 2*(2), 1841–1848.
- Ariffin, K., Noor, N. A. M., Alias, A., & Hashim, A. H. A. (2017). Vocabulary problems phenomenon among Malaysian technical students: Developing AMIT (aplikasi mudah istilah teknikal) as a solution. In *2016 IEEE 8th International Conference on Engineering Education: Enhancing Engineering Education Through Academia-Industry Collaboration, ICEED 2016* (pp. 193–197).
- Arnó-Macià, E., & Mancho-Barés, G. (2015). The role of content and language in content and language integrated learning (CLIL) at university: Challenges and implications for ESP. *English for Specific Purposes, 37*, 63–73.
- Asgari, A., & Mustapha, G. (2011). The type of vocabulary learning strategies used by

- ESL students in University Putra Malaysia. *English Language Teaching*, 4(2), 84.
- Asgari, A., & Mustapha, G. (2012). Vocabulary Learning Strategies of Malaysian ESL Students. *Pertanika Journal of Social Sciences & Humanities*, 20(3), 751–764.
- Astika, G. (2015). Profiling the vocabulary of news texts as capacity building for language teachers. *Indonesian Journal of Applied Linguistics*, 4(2), 123–134.
- Awang, Z. (2012). *Research Methodology and Data Analysis*. Universiti Teknologi Mara, UiTM Press.
- Baker, M. (1988). Sub-technical vocabulary and the ESP teacher: An analysis of some rhetorical items in medical journal articles. *Reading in a Foreign Language*, 4(2), 91–105.
- Bannur, F. M., Abidin, S. A. Z., & Jamil, A. (2015). A Validation Process of ESP Testing Using Weir's Socio Cognitive Framework (2005). *Procedia - Social and Behavioral Sciences*, 202, 199–208.
- Başıbek, N., Dolmacı, M., Cengiz, B. C., Bür, B., Dilek, Y., & Kara, B. (2014). Lecturers' Perceptions of English Medium Instruction at Engineering Departments of Higher Education: A Study on Partial English Medium Instruction at Some State Universities in Turkey. *Procedia - Social and Behavioral Sciences*, 116, 1819–1825.
- Behnam, B., & Yaghchi, M. A. (2014). The Impact of Formal Instruction of References and Conjunctions on Reading Comprehension of Iranian ESP Students. *Procedia - Social and Behavioral Sciences*, 136(0098), 228–233.
- Bilokcuoğlu, H. (2012). English for Specific Purposes. *English for Specific Purposes. LAÜ Sosyal Bilimler Dergisi*, 3(1), 78–91.
- Boonkongsaen, N. (2019). Reasons for Frequent and Infrequent Use of Vocabulary Learning Strategies by Thai EFL Students. *The New English Teacher*, 13(January), 49–63.
- Boonkongsaen, N., & Intaraprasert, C. (2014a). English Vocabulary Learning Strategies Employed by Thai Tertiary-Levels Students with Different Genders and Levels of Vocabulary Proficiency. *International Journal of Scientific and Research Publications*, 4(3), 1–9.
- Boonkongsaen, N., & Intaraprasert, C. (2014b). Use of English Vocabulary Learning Strategies by Thai Tertiary-Level Students in Relation to Fields of Study and

- Language-Learning Experiences. *English Language Teaching*, 7(5), 59–70.
- Bracaj, M. (2014). Teaching English for Specific Purposes and Teacher Training. *European Scientific Journal*, 10(2), 40–49.
- Brown, H. D. (1980). First Language Acquisition. In *Principles of Language Learning and Teaching* (5th ed., pp. 24–51). Pearson ESL.
- Castillo-Montoya, M. (2016). Preparing for Interview Research : The Interview Protocol Refinement Framework. *The Qualitative Report*, 21(5), 811–831.
- Catalan, R. M. J. (2003). Sex differences in L2 vocabulary learning strategies. *International Journal of Applied Linguistics*, 13(1), 54–77.
- Çelik, S., & Toptaş, V. (2010). Vocabulary learning strategy use of Turkish EFL learners. *Procedia - Social and Behavioral Sciences*, 3, 62–71.
- Cengizhan, L. (2011). Vocabulary learning strategies : a case of Edirne Anatolian high. *Procedia - Social and Behavioral Sciences*, 15, 1870–1874.
- Chaikovska, O., Zbaravska, L., & Bilyk, T. (2019). Podcasts in teaching efl for students majoring in engineering. In *Engineering for Rural Development* (pp. 1915–1920).
- Chung, T. M., & Nation, P. (2004). Identifying technical vocabulary. *System*, 32(2), 251–263.
- Clough, P., & Nutbrown, C. (2012). *A student's guide to methodology : justifying enquiry*. SAGE.
- Crawford, M. (2012). How Engineers Can Improve Technical Writing. Retrieved January 20, 2018, from <https://www.asme.org/career-education/articles/business-writing/how-engineers-can-improve-technical-writing>
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. SAGE Publications.
- Donaye Tous, M., & Haghghi, S. (2014). Evaluation of ESP textbooks : Evidence from ESP textbook of computer engineering major. *International Journal of Research Studies in Language Learning*, 3(2), 55–68.
- Dudley-evans, T., & John, M. J. S. (1998). *Developments in ESP: A multi-disciplinary*

- approach. In *Developments in ESP: A multi-disciplinary approach* (pp. 155–169).
- Dwee, C. Y., Anthony, E. M., Salleh, B. M., Kamarulzaman, R., & Kadir, Z. A. (2016). Creating Thinking Classrooms: Perceptions and Teaching Practices of ESP Practitioners. *Procedia - Social and Behavioral Sciences*, 232, 631–639.
- Dyrud, M. A. (2010). Problem Solving in Engineering and Ethics : Points of Intersection. In *Conference for Industry and Education Collaboration* (pp. 1–10).
- Easterbrook, R. M. (2013). *The process of vocabulary learning : Vocabulary learning strategies and beliefs about language and language learning*. Doctoral dissertation, University of Canberra.
- Ellis, N. C. (1994). *Implicit and Explicit Learning of Languages*.
- Ellis, N. C. (1997). Vocabulary acquisition: Word structure, collocation, word-class, and meaning. In *Vocabulary: description, and meaning* (pp. 122–139).
- Fan, N. (2015). *A Study of Vocabulary Knowledge and Vocabulary Learning Strategies of Chinese EFL Learners*.
- Farrell, P. (1990). Vocabulary in ESP: A Lexical Analysis of the English of Electronics and a Study of Semi-Technical Vocabulary. CLCS Occasional Paper No. 25.
- Farrokh, P., & Sharifi, F. (2019). On the Impact of Determination and Compensation Strategies on Language Learners ' Vocabulary Development. *International Journal of Ins*, 12(3), 105–118.
- Ghazali, M. A. I. M., & Ali, Z. (2017). The Impact of Using VocBlast to Learn Technical Vocabulary at Tertiary Level, 4(3), 22–25.
- Ghee, T. T., Ismail, H. N., & Kabilan, M. K. (2010). Language learning strategies used by MFL students based on genders and achievement groups. *US-China Foreign Language*, 8(1), 50–58.
- Golkar, M., & Yamini, M. (2007). Vocabulary, proficiency and reading comprehension. *The Reading Matrix*, 7(3).
- Gözüyeşil, E. (2014). An Analysis of Engineering Students' English Language Needs. *Procedia - Social and Behavioral Sciences*, 116, 4182–4186.

- Gu, P. Y. (2003). Vocabulary learning in a second language: Person, task, context and strategies. *TESL-EJ*, 7(2), 1–25.
- Gu, Y., & Johnson, R. (1996). Vocabulary learning strategies and language learning outcomes. *Language Learning*, 46(4), 643–679.
- Habbash, M. M. (2014). Needs Analysis of Engineering Students ' English Needs at the University of Tabuk, 5(38), 68–76.
- Hamzah, M. S. G., Kafipour, R., & Abdullah, S. K. (2009). Vocabulary Learning Strategies of Iranian Undergraduate EFL Students and its Relation to their Vocabulary Size. *European Journal of Social Sciences*, 11(1), 39–50.
- Hamzehlou, S., Zainal, Z., & Ghaderpour, M. (2012). Knowledge with Professional Practice A Review on the Important Role of Vocabulary Knowledge in Reading Comprehension Performance, 66, 555–563.
- Harji, M. B., Balakrishnan, K., Bhar, S. K., & Letchumanan, K. (2015). Vocabulary Levels and Size of Malaysian Undergraduates. *English Language Teaching*, 8(9), 119–130.
- Hatami, S., & Tavakoli, M. (2012). The Role of Depth versus Breadth of Vocabulary Knowledge in Success and Ease in L2 Lexical Inferencing. *TESL Canada Journal*, 30(1), 1–21.
- Hsu, W. (2014). Measuring the vocabulary load of engineering textbooks for EFL undergraduates. *English for Specific Purposes*, 33(1), 54–65.
- Hutchinson, T., & Waters, A. (1987). *English for specific purposes*. Cambridge university press.
- Ibrahim, Z. S., Hassali, M. A., Saleem, F., Haq, N. U., Khan, T. M., & Aljadhey, H. (2013). Perceptions and barriers towards English language proficiency among pharmacy undergraduates at Universiti Sains Malaysia. *Pharmacy Education*, 13(1), 151–156.
- Islam, M. (2014). The Differences and Similarities between English for Specific Purposes (ESP) and English for General Purposes (EGP) Teachers. *Journal of Research (Humanities)*, 1(2), 67–76.
- Jindathai, S. (2015). Factors Affecting English Speaking Problems among Engineering Students at Thai-Nichi Institute of Technology. In *The 3rd National*

- Interdisciplinary Academic Conference* (pp. 344–348).
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112–133.
- Kasmo, M. A., Usman, A. H., Idris, F., Said, M. M. M., Yusof, N. A., Haron, H., & Umar, A. (2015). English for teaching and learning of science and mathematics in Malaysian schools: A comparative study on perception between different ethnics. *International Education Studies*, 8(5), 111–118.
- Kazar, S. G., & Mede, E. (2015). The Perceptions of ESP Students' Target Needs: A Case Study. *Procedia - Social and Behavioral Sciences*, 191, 2526–2530.
- Khalid, M. S., & Yamin, S. (2013). E-learning in Malaysian Technical University Network Mohd. *Journal of Engineering and Technology*, 4(1), 1032–1034.
- Kim, H. H. (2013). Needs Analysis for English for Specific Purposes Course Development for Engineering Students in Korea. *International Journal of Multimedia and Ubiquitous Engineering*, 8(6), 279–288.
- Kohnke, L., Zhang, R., & Zou, D. (2019). Using Mobile Vocabulary Learning Apps as Aids to Knowledge Retention : Business Vocabulary Acquisition. *The Journal of Asia TEFL*, 16(2), 683–690.
- Kök, I., & Canbay, O. (2011). An experimental study on the vocabulary level and vocabulary consolidation strategies. *Procedia - Social and Behavioral Sciences*, 15, 891–894.
- Kömür, Ş., & Özdemir, P. (2015). The Effects of Keeping Vocabulary Notebooks on Productive Academic Vocabulary Growth. *Procedia - Social and Behavioral Sciences*, 199, 666–674.
- Krish, P., Meerah, T. S. M., Osman, K., & Ikhsan, Z. (2012). Are UKM graduates ready to face the challenges of the job market? *Procedia-Social and Behavioral*, 59, 584–590.
- Kumar, R. (2019). *Research Methodology: A Step-by-Step Guide for Beginners*. Sage Publications Limited.
- Laufer, B. (1992). How much lexis is necessary for reading comprehension? In *Vocabulary and applied linguistics* (pp. 126–132). Springer.

- Laufer, B., & Nation, P. (1999). A vocabulary-size test of controlled productive ability. *Language Testing*, 16(1), 33–51.
- Lehmann, M. (2007). The Lexical Diversity of Short Texts: Exploring the Receptive-Productive Continuum of Lexical Knowledge. *UPRT 2007: Empirical Studies in English Applied Linguistics*, 293.
- Liton, H. A. (2015). ESP Learners' Needs Related Learning for the Workplace: A Pragmatic Study for Business School. *International Journal of Instruction*, 8(2), 3–16.
- Lu, C. (2018). *Investigating knowledge and use of technical vocabulary in Traditional Chinese Medicine*.
- Manan, A. A., Ali, N. L., & Shamsudin, S. (2013). Does the Malaysian English Language Syllabus Cater to the Academic Vocabulary Needs of Secondary School Students Entering Universities? *Sains Humanika*, 65(2).
- Mashhadi, F., & Jamalifar, G. (2015). ScienceDirect Second Language Vocabulary Learning Through Visual and Textual Representation. *Procedia - Social and Behavioral Sciences*, 192(2001), 298–307.
- Meara, P. (1992). *EFL vocabulary tests*. ERIC Clearinghouse.
- Meara, P., & Jones, G. (1988). Vocabulary Size as a Placement Indicator.
- Mehrpour, S., & Rahimi, M. (2010). The impact of general and specific vocabulary knowledge on reading and listening comprehension: A case of Iranian EFL learners. *System*, 38(2), 292–300.
- Meyer, L. L., & Schmitt, N. (2008). Vocabulary in Language Teaching. *TESOL Quarterly*, 36(2), 235.
- Milton, J. (2013). Measuring the contribution of vocabulary knowledge to proficiency in the four skills. *EUROSLA Monographs Series 2. L2 Vocabulary Acquisition, Knowledge and Use*, (1983), 57–78.
- Miralpeix, I., & Muñoz, C. (2018). Receptive vocabulary size and its relationship to EFL language skills. *IRAL - International Review of Applied Linguistics in Language Teaching*, 56(1), 1–24.

- Mohamed, A. A., Radzuan, N. R. M., Kassim, H., & Ali, M. M. A. (2014). Conceptualizing English workplace communication needs of professional engineers: The challenges for English language tertiary educators. *Selangor Business Review (SBR)*, 1(1).
- Mokhtar, A., Rawian, R., & Yahaya, M. (2017). Vocabulary learning strategies of adult ESL learners. *The English Teacher*, 12, 133–145.
- Musikhin, I. A. (2016). English for Specific Purposes: Teaching English for Science and Technology. *ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences*, III–6(July), 29–35.
- Mutalib, A. H. binti A., Kadir, R. B. A., Robani, R. binti, & Majid, F. A. (2014). Vocabulary Learning Strategies among Malaysian TEVT Students in German-Malaysian Institute (GMI). *Procedia - Social and Behavioral Sciences*, 123, 361–368.
- Nasir, N. F. W. M., Manan, N. A. A., & Azizan, N. (2017). Examining the Relationship Between Vocabulary Knowledge and General. *Journal of Social Sciences and Humanities*, 1(November), 15–22.
- Nation, P. (1990). Teaching and Learning Vocabulary. *Issues in Applied Linguistics*, 2(1), 275.
- Nation, P. (2001). *Learning Vocabulary in Another Language*. Cambridge: Cambridge University Press.
- Nation, P., & Beglar, D. (2007). A vocabulary size test. *The Language Teacher*, 31(July), 9–13.
- Nation, P., & Waring, R. (1997). Vocabulary Size, Text Coverage and Word Lists. *Vocabulary: Description, Acquisition and Pedagogy*.
- Nezhad, A. N., Moghali, M., & Soori, A. (2015). Explicit and Implicit Learning in Vocabulary Acquisition. *Asian Journal of Education and E-Learning*, 03(01), 18–25.
- Ng, K. K. (2001). ESP in Malaysia - The background and problems. *Journal of Modern Languages*, 13(1), 37–50.
- Nikoopour, J., & Kazemi, A. (2014). Vocabulary Learning through Digitized & Non-digitized Flashcards Delivery. *Procedia - Social and Behavioral Sciences*, 98, 1366–

1373.

- Nirattisai, S., & Chiramanee, T. (2014). Vocabulary Learning Strategies of Thai University Students and Its Relationship to Vocabulary Size. *International Journal of English Language Education*, 2(1), 273.
- Noprianto, E., & Purnawarman, P. (2019). EFL students' vocabulary learning strategies and their affixes knowledge. *Journal of Language and Linguistic Studies*, 15(1), 262–275.
- Nordin, N. R. M., Stapa, S. H., & Darus, S. (2015). Are my words good enough to eat?: The teaching and learning of specialized vocabulary in culinary studies. *E-Bangi*, 12(4), 77–83.
- Nurweni, A., & Read, J. (1999). The English vocabulary knowledge of Indonesian university students. *English for Specific Purposes*, 18(2), 161–175.
- Oh, J., Lee, J., Lee, K., & Choi, K. (2000). Japanese term extraction using dictionary hierarchy and machine translation system. *Terminology. International Journal of Theoretical and Applied Issues in Specialized Communication*, 6(2), 287–311.
- Omar, A. H. (2017). Directions in ESP Research. *Journal of Modern Languages*, 7(1), 1–15.
- Ouarniki, W. (2012). *The Current Situation of English for Specific Purposes Courses at University Level : Analysis , Evaluation and Perspectives . The case of : Fourth year classic students of architecture at Biskra University . University Mohamed Khider of Biskra.*
- Oxford, R. . (1990). *Language Learning Strategies.*
- Paribakht, T. S., & Webb, S. (2016). Journal of English for Academic Purposes The relationship between academic vocabulary coverage and scores on a standardized English proficiency test. *Journal of English for Academic Purposes*, 21, 121–132.
- Peters, P., & Fernández, T. (2013). The lexical needs of ESP students in a professional field. *English for Specific Purposes*, 32(4), 236–247.
- Psonder, T., Casey, A., Tatzl, D., Millward-Sadler, A., & Meixner, K. (2016). Teaching ESP in Higher Education: Examples from Evidence-Based Practice. In *8th Austrian UAS Language Instructors' Conference*. University of Applied Sciences.

- Puagsang, N. (2017). Vocational Students' Use of Vocabulary Learning Strategies. *Pasaa Paritat Journal*, 32(2017), 146–165.
- Qian, D. (1999). Assessing the roles of depth and breadth of vocabulary knowledge in reading comprehension. *Canadian Modern Language Review*, 56(2), 282–308.
- Qian, D. D. (1998). Depth of Vocabulary Knowledge: Assessing its Role in Adults' Reading Comprehension in English as a Second Language, 1–186.
- Rahman, M. M. M. (2012). The English language needs of computer science undergraduate students at Putra University, Malaysia: A focus on reading skills. *English for Specific Purposes World*, 12(34), 1–23.
- Rastegar, Z., Shirazi, H., & Yamini, M. (2011). Investigating the Interface Between Depth of Vocabulary Knowledge and EFL Learners' Strategy Use, 14(5), 666–673.
- Read, J. (2013). Validating a Test to Measure Depth of Vocabulary. In *Validation in Language Assessment* (pp. 55–74). Routledge.
- Reddy, B., & Gopi, M. (2013). The Role of English Language Teacher in Developing Communication Skills among the Students of Engineering and Technology. *International Journal of Humanities and Social Science Invention*, 2(4), 29–31.
- Rieder, A. (2003). Implicit and explicit learning in incidental vocabulary acquisition. *Vienna English Working Papers*, 12, 24–39.
- Robinson, P. C. (1991). *ESP today: A practitioner's guide*. Hemel Hempstead: Prentice Hall.
- Schmitt, N. (1994). Vocabulary Testing: Questions for Test Development with Six Examples of Tests of Vocabulary Size and Depth. *Thai TESOL Bulletin*, 6(2), 9–16.
- Schmitt, N. (1997). *Vocabulary learning strategies. Vocabulary: Description, acquisition and pedagogy*.
- Schmitt, N., & McCarthy, M. (1997). *Vocabulary: Description, acquisition and pedagogy*. Cambridge university press.
- Şen, Y., & Kuleli, M. (2015). The Effect of Vocabulary Size and Vocabulary Depth on Reading in EFL Context. *Procedia - Social and Behavioral Sciences*, 199, 555–562.

- Sentürk, B. (2016). Self-regulation Strategies and Vocabulary Size of EFL Turkish University Students. *Procedia - Social and Behavioral Sciences*, 232(April), 90–97.
- Shabani, M. B., & Ghasemi, A. (2014). The effect of task-based language teaching (TBLT) and content-based language teaching (CBLT) on the Iranian intermediate ESP learners' reading comprehension. *Procedia - Social and Behavioral Sciences*, 98, 1713–1721.
- Shadikah, A. A., Fauziati, E., & Supriyadi, S. (2017). The Effect of Vocabulary Learning Strategies on Vocabulary Mastery Based on Gender Differences. In *Proceeding of International Conference on Art, Language, and Culture* (Vol. 2, pp. 495–505).
- Shannon-Baker, P. (2016). Making Paradigms Meaningful in Mixed Methods Research. *Journal of Mixed Methods Research*, 10(4), 319–334.
- Sidek, H. M., & Rahim, H. A. (2015). The Role of Vocabulary Knowledge in Reading Comprehension : A Cross-Linguistic Study. *Procedia - Social and Behavioral Sciences*, 197(February), 50–56.
- Smith, S. (2020). DIY Corpora for Accounting & Finance vocabulary learning. *English for Specific Purposes*, 57, 1–12.
- Spence, P., & Liu, G.-Z. Z. (2013). Engineering English and the high-tech industry: A case study of an English needs analysis of process integration engineers at a semiconductor manufacturing company in Taiwan. *English for Specific Purposes*, 32(2), 97–109.
- Sulaiman, N. A. (2018). Academic Word List Knowledge of Malaysian ESL Undergraduates, 18(November), 1–14.
- Sumintono, B. (2015). Science education in Malaysia : challenges in the 21 st century. In *1st International Seminar on Science Education (ISSE) 2015* (pp. 1–10).
- Tahmasebi, G.-A., Ghaedrahmat, M., & Haghverdi, H. (2013). The relationship between language proficiency and Iranian EFL learners' knowledge of vocabulary depth versus vocabulary breadth. *Latin American Journal of Content and Language Integrated Learning*, 6(2), 96–111.
- Takač, V. P. (2008). *Vocabulary learning strategies and foreign language acquisition*. Clevedon, UK: Multilingual Matters.
- Tang, E. (2007). An exploratory study of the English vocabulary size of Hong Kong

- primary and junior secondary school students. *The Journal of Asia TEFL*, 4(1), 125–144.
- Tinutda, K., & Waraporn, S. (2011). Vocabulary Learning Strategies Employed by Undergraduate Students and its Relationship to their Vocabulary Knowledge. *The 3rd International Conference on Humanities and Social Sciences*, (Proceedings-Factors Affecting English Language Teaching and Learning), 1–18.
- Tsou, W., & Chen, F. (2014). ESP program evaluation framework: Description and application to a Taiwanese university ESP program. *English for Specific Purposes*, 33(1), 39–53.
- Tzoannopoulou, M. (2015). Rethinking ESP: Integrating Content and Language in the University Classroom. *Procedia - Social and Behavioral Sciences*, 173, 149–153.
- Variawa, C. (2014). *Investigating the Language of Engineering Education (Doctoral Dissertation)*. University of Toronto.
- Vela, V., & Rushidi, J. (2016). ScienceDirect The Effect of Keeping Vocabulary Notebooks on Vocabulary Acquisition and Learner Autonomy. *Procedia -Social and Behavioral Sciences*, 232(April), 201–208.
- Viberg, O., & Grönlund, Å. (2012). Mobile assisted language learning: A literature review. *In Proceedings of the 11th International Conference on Mobile and Contextual Learning*, 1–8.
- Waldvogel, D. A. (2013). The Relationships between Vocabulary Learning Strategies and Vocabulary Size among Adult Spanish Foreign Language Learners. *Journal of Language Teaching and Research*, 4(2), 209–219.
- Wanpen, S., Sonkoontod, K., & Nonkukhetkhong, K. (2013). Technical Vocabulary Proficiencies and Vocabulary Learning Strategies of Engineering Students. *Procedia - Social and Behavioral Sciences*, 88, 312–320.
- Wasuntarasophit, S. (2008). Technical and academic vocabulary in electrical engineering textbooks. *Doctoral Dissertation, English Language Studies, Suranaree University of Technology, Nakhon Ratchasima, Thailand*;
- Wessels, S. (2011). Promoting vocabulary learning for English learners. *The Reading Teacher*, 65(1), 46–50.
- Wong, E. M. Y. (2014). *A case study of the vocabulary learning strategy use of twenty*

Chinese ESL learners in Australia. Doctoral Dissertation. Griffith University.

Wu, Q. (2015). Designing a smartphone app to teach English (L2) vocabulary. *Computers and Education*, 85, 170–179.

Xhaferi, B. (2010). Teaching and learning ESP vocabulary. *Revista de Lenguas Para Fines Especificos*, 15/16 (200(2009), 229–255.

Yunus, K., & Saifudin, M. S. (2019). VOCABULARY LEARNING STRATEGIES AMONG ENGLISH AS SECOND. *Journal of Qualitative Social Sciences 2019*, 1(1), 12–19.

Zaaba, Z., Mooradian, M., Gunggut, H., Niane, I., Aning, A., Ibrahim, F., & Ramadan, M. (2013). Teaching Science and Technology in English : Language-in-Education Policy in Malaysia. *Recent Technological Advances in Education*, 131–135.

Zafarani, P., & Kabgani, S. (2014). Summarization Strategy Training and Reading Comprehension of Iranian ESP Learners. *Procedia - Social and Behavioral Sciences*, 98, 1959–1965.

Zareva, A., Schwanenflugel, P., & Nikolova, Y. (2005). Relationship Between Lexical Competence and Language Proficiency : Variable Sensitivity. *Studies in Second Language Acquisition*, 27(04), 567–595.

Zhang, M. (2014). A Corpus-based Comparative Study of Semi-technical and Technical Vocabulary, (October 2013), 148–172.