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Investigating the Efficacy of Computer and Mobile Assisted Vocabulary Learning in Developing Academic Writing Skills with Saudi University Students.

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Abstract

The academic register of English language has been thought of as a challenging cognitive and pedagogical endeavour for non-native university students whether their L2 educational context is domestic or international. To facilitate the acquisition of academic language, several approaches were proposed over years, chief among which are Computer Assisted Language Learning (CALL), and Mobile Assisted Language Learning (MALL). Each of the two language learning approaches has been exclusively employed to teach one feature of the inseparable academic language lexico-grammar at moderate levels of efficacy, yet the joined cognitive forces of the two approaches have not been thoroughly examined in the available literature. In this study, a short intervention was designed to teach 30 Saudi university students the most frequent 40 general academic vocabulary items, several frequent academic phrases, and 1 salient academic language feature, namely hedging to improve the lexico-grammar of Saudi university students' written production. Target vocabulary was directly derived from Oxford Phrasal Academic Lexicon (OPAL). CALL used as the main medium of instructions, in-class activities, and exercises, and MALL employed to compliment the intervention's activities outside class, and enhance target vocabulary's entrenchment and priming in student's academic repertoire. Pre-/post-test results of six different variables show statistically significant correlation between the use of CALL and MALL together and Saudi university students' academic language gains. A large effect size (d= 1.6) was observed for vocabulary-related variables, a medium effect size (d= 1.08) for grammar and structure-related variables, and a small effect size (d= .65) for academic voice-related variables.

Chapter One: Introduction

1.1 Overview

Learning happens when learners are offered adequately engaging opportunities where they are able to see a learning task as valuable, purposeful, and useful, and perceive themselves as capable of doing it (Lee & Egbert 2016). Used well, computers can both support and provide engaging learning opportunities to foreign language learners. Egbert (2010) maintains that using computers to assist language learning can lead to greater success by differentiating and providing access to data and/or interactions that were inaccessible otherwise, and/or affording more efficient learning rates in pursuit of language goals and learning objectives. Accordingly, and in the light of the growing centrality of technology, computer assisted language learning (CALL) has reshaped language pedagogy. This is true because, as delineated in Chapelle (2001: 27-43), CALL is placed within six sub-disciplines that integrate and complement each other in a cognitively feasible fashion, namely computer-supported collaborative learning, artificial intelligence, educational technology, computational linguistics, corpus linguistics, and computer-assisted assessment.

CALL, however, has been notoriously thought of as a language pedagogy panacea, where second language acquisition researchers proposed it as an instructional solution, and then started searching for a problem that could be solved using it (Clark 1994). Several years later, SLA community realized that the sheer focus and devotion to computers in themselves was not enough, and realized the necessity for SLA research in CALL contexts (Bangs & Cantos 2004). Accordingly, CALL was agreed to only replace elements deemed valid by research and experience, and as CALL developed, technology encouraged SLA researchers and teachers to engage learners in ways never attempted before.

1.2 Language Teachers and CALL

The roles of language teachers and language learners changed as CALL technologies advanced. Learners are viewed as active participants in their language education rather than passive recipients of information. Accordingly, teachers are faced with new demands, namely to integrate technology seamlessly into their foreign language classrooms, and to find new ways to offer their students meaningful communication that contextualize the introduction of linguistic skills. Park and Son (2009) maintain that CALL changes the traditional teacher-student roles where teachers become more of facilitators and counselors rather than informants and decision makers. Their function in the language classroom shifts from transmitting knowledge to providing students with tools to acquire linguistic knowledge, and understand the value of what technology has to offer. This may imply that the role of the teach in CALL context is even more crucial compared to traditional EFL teaching contexts because their role extends itself into creating language learning environments and experiences that are meaningful, effective and supportive of using CALL technology. Grupa (2004: 636) cites:

> Never before have teachers so urgently needed to know what knowledge
>
> they want to transmit and for what purpose, to decide what are the more
>
> or less important aspects of that knowledge, and to commit themselves
>
> to an educational vision they believe in.

Computers; hence, did not only change traditional class dynamics, but they also changed how materials are designed, and how assessments are conducted where the teacher becomes a mediator between computers and language learners throughout the entire educational process. That mediation is most significant in the cases when teachers are required to deepen students'

understanding of the relationship between text and context "in order to avoid portraying multimedia in simplistic ways" (Grupa 2004: 637). The present study employs a student-focused design where the teacher/researcher takes a noninvasive instructional role targeted to assist students overcome technology-induced anxiety in a challenging EFL environment in a Saudi higher education context. As will be elaborated upon in the review of literature, CALL in Saudi university education suffers a large number of internal and external constraints that prevents its proper implementation, and explains the high level of anxiety exhibited by the participants.

1.3 Research in CALL

Research on CALL domain generally focuses on the efficacy of learning opportunities afforded by technology, the way these technologies are constructed and configured in order to provide engaging learning opportunities, and the way language learners can autonomously use these technologies in language education beyond traditional class instructions. Chapple (2008:589) maintains that research goals on CALL have been shaped by "the imperative for knowledge that can be put into practice." Language teachers need to be informed about applied linguists' findings on the application of technology in L2 pedagogy. Insights provided by descriptive research, on the one hand, are of paramount importance to L2 teachers in order to understand what technology is able to add to language instructions, and to identify reasons for and methods through which learners develop different communicative competences in ways that do not typically happen in the traditional L2 classroom. Evaluative research, on the other hand, sets out to prove the quality of CALL-based education by comparing results obtained using technology-based methods to results of learning in a traditional classroom. Chapple (2008) maintains that fruitful comparative research "investigates the outcomes of two real options for pedagogical tasks…rather than attempting

to address the intractable issue of computer effectiveness." To that end, the present study shall be fully experimental in nature with a control group to empirically compare learning gains of a CALL-based vocabulary intervention, and traditional vocabulary instructions.

In the present study, a selection of 40 academic vocabulary items, and a number of phraseological expressions salient in academic discourse derived from Oxford Phrasal Academic Lexicon (OPAL) was taught contextualized in four short essays. Contextualized target lexical items was then be explicitly taught using a Web 2.0 flashcard platform, namely *Quizlet*. Web-based in-class exercise was conducted to reinforce the correct collocation and grammatical usage on the new lexical items. Target lexical items was then reiterated and practiced via mobile phone text messages facilitated by a smart phones mobile application, namely Whatsapp, where messages with specific exercises was sent at fixed intervals to enhance the enhance the rapid entrenchment of lexical items' meaning and usage. Employing academic pedagogical wordlists to inform a computer assisted vocabulary-learning intervention that was paired with out-of-class mobile assisted language learning practice made possible via smart phones' applications promise an interdependent, thorough and potentially highly effective application of CALL for English for Academic Purposes vocabulary instructions.

Chapter two: Literature Review

Academic Language/Vocabulary

Academic language is a well-researched enterprise, and a large family of terms surrounds its definition and meaning. Cummins (1999 & 2008) attempted one of the very first distinctions between what he terms Basic Interpersonal Communicative Skills (BISC), and Cognitive Academic Language Proficiency (CALP). Scarcella (2003: 9) defines it as "a variety of English used in professional books and characterized by the specific linguistic features associated with academic disciplines." Within the scope of this research, the most comprehensive definition of academic language is presented by Bailey (2007:10) "knowing and being able to use *general and content-specific vocabulary*, complex grammatical structures, and multifarious language functions and discourse structures to interact about a topic or impart information to others." *General academic vocabulary* is variously labeled as sub-technical words, specialized non-technical lexis, and common core vocabulary. Coxhead (2000:218) defines them as "lexical items that occur frequently and uniformly across a wide range of academic material." Townsend (2009:242) defines them as "words which are used across content areas." Their salience in academic discourse suggests their immediate importance in academic language instructions, and their pedagogical potential to augmenting the lexical competence of academic writing learners.

The definition of academic vocabulary begs the question of whether academic writing pedagogy should focus on the lexical skills/features salient across different disciplines, or the focus be limited to vocabulary needed in distinct disciplines. Hyland (2006) puts forward three main reasons why English for Academic Purposes (EAP) instructions should be focused on general academic vocabulary:

1- Language teachers lack the expertise and the level of specialist content control required to teach domain-specific language, which could result in misleading students while attempting to teach what is essentially not linguistic.
2- In the process of developing the academic linguistic competence, EAP learners are not equipped to engage with the discipline-specific language tasks. They rather require preparatory classes that prepare them for general academic English first.
3- EAP should focus on "the common core" since a finite set of linguistic skills comprise almost all academic textbooks, and no significant lexico-grammatical variation exists to justify subject-specific academic language instructions.

Formulaicity of Academic Language

It is remarkable to reflect on how 'unoriginal' the process of language formulation is. Recently, several studies have used corpus data to prove how recurrent prefabricated formulaic sequences are used in language production. Altenberg (1998), to name one example, estimates that 80% of words used in the London-Lund Corpus are parts of recurrent lexical combinations. Oakey (2002:112) cites: "a minority of spoken clauses are entirely novel creations in the sense that the combination of lexical items is new to the speaker." Phraseology, lexical bundles, word clusters, or more comprehensively, formulaic language proliferate academic writing with equal measures. Simpson-vlach and Ellis (2010) maintain that large stretches of academic language comprise collocation streams flowing into each other, which complies with Sinclair's Idiom Principle according to which "a language user has available to him a large number of semi-preconstructed phrases that constitute single choices, even though they might appear to be analyzable into segments" (P. 110). Hyland and Jiang (2018) finally maintain that academic writing comprises an inventory of prefabricated phrases that is larger in size than that of news and fiction writing genres "with over 450

different four-word clusters occurring more than 10 times in one million words" (P. 385). Accordingly, the dense formal lexis of academic language comprises "core" conventionalized components of vocabulary and formulaic language that could be prioritized and focused on in academic writing vocabulary instructions.

University Students' Lack of Academic Lexical Competence

The severity of lack of linguistic competence displayed by university students, especially in academic language processing and production variates, yet almost always remains perceivable and problematic. Biber (2006) asserts that university students have to make major adjustments to handle a range of obstacles and difficulties many of which involve using language in new ways, more particularly, developing the ability to understand and produce academic discourse. Wong Fillmore and Snow (2000) as cited in Scarcella (2003:3) illustrate the magnitude of the problem in California State University reporting "the failure rate of the English placement test across the 22 campuses in 1998 was 47%; at one campus, it was 85%." On a less drastic level, Wood (2015) refers to the missing "naturalness" in students' academic writing, which is caused by deviation from the conventionalized norms of academic language production. This level of linguistic incompetence manifests itself in the case of international students studying in native-speaking educational institutes. The enormity of the problem is truly perceived if looked at in non-native educational institutes, especially in the Middle East. Alfadda (2012) and Alrabai (2016) identified a number of difficulties characterizing Saudi university students' academic writing. While there seem to be several reasons for Saudi students' lack of proficient academic writing, including the profound influence of Arabic language for cultural and religious reasons; teacher behavior in class and problems with the Saudi educational system, curriculum design and teaching methods seem to be the most difficult conundrums facing

both teachers and students. Alrabai (2016) maintains that technology is scarcely used in EFL contexts; even technologies as basic as computers, projectors, and recorders seem to be outlandish concepts in Saudi educational institutes. Results from Alqahtani (2011) clearly indicate writing as the most difficult of the four language skills for Saudi university students. In addition to the overarching difficulty with writing, Al-Khairy (2013) cites lack of appropriate vocabulary and limited vocabulary size as the most acute problem faced by university level Saudi students studying locally and internationally. As a possibly effective solution to Saudi students' lack of academic lexical competence, and in compliance with the scope of the current research, the definition, pedagogical theories, and instructional efficacy of Computer Assisted Language Learning (CALL) in teaching general academic lexis shall be reviewed in details in the following sections.

Computer-assisted Language Learning: Definition and Overview

A definition that encompasses the broad applicability of Computer-assisted Language Learning (CALL) is "any process in which a learner uses a computer and, as a result, improves his or her language" (Beaty 2010:7). While sounding rather loose, the definition represents the amorphous nature of CALL and the technology that derives it since it is deliverable through a myriad of software and hardware both inside and outside the language classroom. Modern CALL has been shaped not only by technology advancement, and improved individual digital literacies, but also by theories and pedagogical trends of second language acquisition (SLA). While the former factor is progressive and linear in nature, the latter is disorganized, and in some cases self-contradicting, which predicts, looking in retrospect, how complex the history of computer-language relationship is (Davies, Otto & Rüschoff 2013).

Healy (2016) maintains that, as technology advances, different acronyms on the periphery of computers and language dichotomy until CALL. CALL suggested by Davies and Higgins in 1982, and became the preferred acronym. Mobile-assisted language learning (MALL) emerged as a subdivision of CALL. It was used to emphasize learners' communication over the Internet and smart mobile phone application in language pedagogy. Healy (2016:53) cites three operational roles/stages of computers in language learning: "behavioristic, communicative and integrative." In the first stage, CALL is based on programs that drill and facilitate practice, in the second, the focus is on computer as educational tools, and the third is the post-internet era characterized by full integration of computers in classroom practice.

Using computers in language pedagogy must be grounded on a solid theoretical base, and while there are scarce language acquisition theories that are native to CALL Hubbard (2008), Hubbard and Levy (2016) maintain that CALL instructions are based on three main second language acquisition (SLA) theories namely, The Interaction Account, The Sociocultural Theory, and Constructivism.

Empirical Pedagogical Value of CALL

On a general note, CALL has been cited as a major contributor to SLA in all four subskills. Reading is taught using text-based glosses, online dictionaries, and concordancing tools, and using more socio-culturally informed technologies including chat and email (Liaw & English 2017). Writing is taught using three technology categories, the first is Web 2.0 applications for content contribution including wikis and Google docs, the second is automated writing evaluation systems, and the third is corpus-based tools such as Corpus of contemporary American English (COCA) and Michigan Corpus of Upper-level Student Papers (MICUSP) (Li, Dursun & Hegelheimer 2017). Listening teaching and learning is enhanced using several digital devices (computers and media players), and Web 2.0 applications such as YouTube

and English Central to maximize exposure to authentic native language (Hubbard 2017). Finally, speaking is taught and learned using various synchronous and asynchronous CMC activities, tutorial, and CALL activities (Blake 2017). On a more specific note, the efficacy of CALL in SLA has been empirically proven in modern literature within and beyond the boundaries of the four subskills as will be illustrated in the subsequent section.

CALL seems to pedagogically accommodate diverse learner factors such learning styles, gender and age. Lee, Yeung and Ip (2016) conducted a study on a large number (401) of students aged 17-36, with 140 male participants and 261 female participants. They collected data using a questionnaire designed to examine learning styles, motivation, autonomy and computer use. Their results indicated that neither gender nor age has any significant effect on learners' competence to respond to CALL, and that learners with visual and kinesthetic learning styles are more readily equipped to use CALL tactile learning style. These findings are generally acceptable since no comparison with made with younger participants, e.g. elementary students, where competence level could have variated as indicated by (Chiu 2013).

In a similar vein, Parmaxi and Zaphiris (2016) synthesized a sizable body of research pertinent to the pedagogical value of Web 2.0-based CALL tools in L2 learning contexts, a total of 41 studies. Authors investigated a variety of Web 2.0 technologies including web-based corpus, wikis, blogs, Facebook, and Google Documents. They concluded that these technologies support a range of linguistic and metalinguistic skills including but not limited to writing (15/41 studies), interaction and engagement (5/41 studies), intercultural awareness (4/41 studies), speaking (3/41 studies) and autonomous learning (3/41 studies). Investigating such recent body of literature highlights the ubiquitous presence of CALL technologies in L2

teaching, and the growing body of scholarly activity that proves the efficacy of CALL beyond the mere teaching of the four subskills.

Investigating the efficacy of CALL in teaching English for Specific Purposes (ESP) can illuminate CALL's affordances in teaching English for Academic Purposes (EAP), which is the purpose of the present study. Dashtestani and Stojković (2015) reviewed 55 research studies on using CALL technologies in ESP instructions namely, course management systems (CMS), corpus, electronic academic dictionaries, grammar checkers, plagiarism detection software, virtual reality, wikis, blogs and social networking, and mobile devices and tablets. They concluded that there is clear empirical evidence for the efficacy of CMS, corpora and wikis and hand-held devices in ESP instructions. Based on the number of researches reviewed in this study, such findings suggest possible high efficacy for CALL in teaching academic vocabulary and formulaic language.

CALL has also been reported as an effective medium for reading instructions. Two recent studies conducted in different EFL contexts and countries namely Saudi Arabia and Iran (Alseghayer 2016, Eftekhari 2018) argue for the value of CALL in assisting comprehension and promoting reading abilities. The former was teacher-focused where a representative sample of 39 male and 31 female experienced college-level reading teachers were surveyed with regards to their perceptions about the importance of CALL in L2 reading. Instruments of reliability and validity were applied to the questionnaire used, and its results were statistically analyzed. It was concluded that on the attitude favorability scale, the surveyed sample had a positive attitude about CALL for reading. The latter was a longitudinal study that investigated the efficacy of reading via computer versus pen and paper in an EFL context in terms of comprehension, recollection and retention of argumentative text. To that end, 120 undergraduate students were received software-based instructions on argument structures for

a whole university term, and it was concluded that argument reading via computer has significantly supported subsequent comprehension and retention of study material. The reason for this positive correlation is argued to be due to the high usability of the software that facilitated the construction of arguments faster than pen-and-paper method; hence allowing more time for assimilation and comprehension of arguments.

The pedagogical efficacy of CALL extends itself into teaching particular grammatical components. Kılıckaya (2013) compared the statistical significance of three different types of instructions of teaching adverbial clauses; computer-based instruction, teacher-driven instructions, and teach-driven supported by computer based instructions. Pre- and posttest results for the 50 EFL learners who participated in the study were compared and it was concluded that learning gains for computer-based instructions were higher than traditional instructions, and the combined teacher-computer instructions are more effective than exclusive computer instructions. The number of participants used in the study qualify for possible generalization of results, and promises similar success especially if the taught grammar is less complicated. It must be noted here that the study employed explicit rather implicit grammar instructions. No clear evidence of incidental grammatical gains could be concluded yet this conclusion does not negate the findings reached by Kuppens (2010) that incidental grammar acquisition is possible during exposure to media.

Finally, Grgurovic, Chappelle, and Shelley (2013) present a compelling argument for the effectiveness of CALL in their meta-analysis. The authors surveyed the results of 200 empirical CALL studies conducted between 1970 and 2006 and synthesized the results of 37 studies that met the inclusion criteria. To decide whether CALL interventions had an effect on learning, effect size of several CALL aspects including instructional conditions (duration of the intervention, type of technology used, and the degree to which technology was

integrated), learners characteristics, and research design (assignments required, number of participants, and educational settings). They concluded that when comparing between CALL and non-CALL groups, within rigorous research design conditions, CALL groups out performed non-CALL groups by a small yet positive and statistically significant mean effect size of 0.257. In pre- post-test designs, CALL groups were also seen to improve with effect sizes that were small yet positive and statistically significant.

CALL Issues and Limitations

Despite the theoretical soundness, and the acclaimed pedagogical efficacy of CALL, it has received criticism on several accounts. To start with, Wang and Heffernan (2010) commented on a number of ethical concerns where CALL could violate personal privacy by automatically recording learning history and learning results through cookies, and allowing a possibility of divulging what is considered private information including homework, online collaborative projects and grades. Mahdy (2013) maintain that CALL has not, and is not projected to be "normalized" in class since there are still teachers who believe that computers are outside the teacher pedagogical knowledge, and may negatively affect the language classroom. He highlights three main concerns for computer transparency and normalization in language classrooms. First, personal issues pertinent to teachers and students manifested in the lack of time and resources tend to prohibit effective CALL activities in class. Second, pedagogical issues, since a large section of EFL courses are still being taught in traditional ways, and the majority of textbooks do not readily allow the integration of CALL. Third, socio-cultural issues, especially in conservative communities including the Arab world, where there are "cultural impediments" (P. 194) that discourage teachers from integrating CALL in teaching in the sense that they may contain ethically inappropriate material. Finally, Yasmin (2018) emphasizes that the major limitation is that CALL could be liable to lack of

teacher training on the use of multimedia in classroom, domination of written communication in instructions, assignments and exams, and teacher centered classroom structure that does not allow an adequate level of learner autonomy or technology exploration. It is important to note, however, that these limitations are not intrinsic to CALL per se, but they are more recognized in the way learners and teachers interact with it. One last major issue with CALL is that its pedagogical theory tends to have a rather peripheral position in articles that describe CALL interventions. CALL researchers tend to be mere consumers of linguistic theories developed for other specific purposes. Such a tendency ignores or at least minimizes the prominence of technology in the learning language-learning environment, or more dangerously customizes the theory itself to accommodate the new technology-driven context (Stockwell 2016).

On a more specific note that is more pertinent to the present study, integrating CALL in EFL Saudi settings has been facing a number of impediments. Integrating CALL in EFL settings imply the use of computers to complement language instructions not to supplement it so that the learning experience is enhanced with the resources and opportunities made available by computers and would not be available otherwise. However, Al-Rasheed et al. (2015) maintain that Saudi Ministry of Education and Ministry of Higher Education strictly regulate curricula development in all educational institutions in Saudi Arabia, and they tend not to motivate or encourage the integration of CALL in language classrooms. Furthermore, no visible effort is made to provide teachers with software that enables them to create CALL-informed lessons or programs. Al-Kahtani and Al-Haider (2010) delineate several overt and covert factors that inhibit the use of CALL in language instructions. They surveyed four Saudi Universities and found that female faculty members were not provided with sufficient computing facilities and that while financial support was adequately provided to female instructors, essential training and institutional and technical support were missing. Another

important, yet less impactful factor was lack of interest on the side of teachers to use computers in language teaching. Despite the scarcity of technology, and other cultural and organizational limitations, Al-Kahtani (2011) and Saqlian et al. (2013) report positive attitudes and readiness on the part of English language instructors to use CALL in EFL instructions. In the two cited studies, most faculty members believe that the integration of CALL would be beneficial to teaching the four subskills.

Mobile Assisted Language Learning

Mobile assisted language learning (MALL) is a research topic within the field of CALL that provides solutions to a number of limitations of CALL including but not limited to over emphasis on delivery method, dense workload, and inadequate teacher training. With its portability and the built-in capacity to display images, videos, and texts, the potential of mobile phones in language education can be hardly doubted. Nevertheless, the physical characteristics of the screen and input, and the overwhelming skeptical attitude on the part of learners can represent unresolved problems. According to Stockwell (2016), research on (MALL) can be broadly categorized into research under controlled conditions and research outside the classroom with the majority of research focusing on vocabulary and listening teaching. He puts forward a number of principles that must be considered while designing MALL instructions, chief among which are limiting multitasking, keeping MALL activities short, and using texting with boundaries. Miangah and Nezarat (2012) cite a number of properties that characterize MALL through various devices with special emphasis on mobile phones including portability, social interactivity, context sensitivity, and individuality. Such affordances of mobile phone devices allows numerous pedagogical opportunities in EFL contexts. The general research trends and pedagogical value of MALL are explained hereunder.

Empirical Pedagogical Value of MALL

In their recent review of 78 MALL-related articles, Elaish et al. (2017) maintain that MALL is capable of supporting almost all areas of SLA namely, vocabulary, speaking and listening, comprehension, and writing with proven advantages including connectivity, spontaneity, and collaboration. They highlighted the ubiquity of MALL research in EFL contexts. However, the review did not tackle the effect size of MALL interventions in the selected articles.

In another review of MALL publications, Hwang and Fu (2018) surveyed the research design and applications of mobile language learning and found that the number of studies using mobile education has increased significantly in the last five years. It was also observed that the scholarly body of research is moving from teaching individual language skills to delivering multiple language skills using authentic materials. They also observed that MALL brought high effectiveness in terms of speaking, vocabulary, writing and pronunciation in the majority of reviewed articles.

Empirically, Rosell-Aguilar (2018) studied learner autonomy afforded by MALL, the case of a particular language learning mobile application, *busuu*. The article cites results from a large sample of 4095 participants whose data were collected by means of online survey. Findings suggest that the applications helped them improve their language knowledge, with vocabulary being the main area of development. It is clear that the large population employed, and data collection method used in this study qualifies generalization of findings into similar pedagogical settings.

Another case study of L2 learning mobile application *Duolingo* by Loewen et al. (2019) cites findings of a semester-long intervention for nine participants learning Turkish. Participants showed improvement in L2 measures including the four subskills and learners' lexico-grammar with positive moderate correlation between learning gains and time spent using

Duolingo. The study, while present positive results for MALL, its results can be generalized cautiously since the sample size was limited to eight participants.

Finally, in their meta-analysis, Sung, Chang and Yang (2015) synthesized the results of 44 peer-reviewed journal articles on the effect of language learning using mobile devices, and reported a meaningful improvement in all taught skills using MALL with a medium effect size of 0.55 with 95% confidence interval of 0.387–0.705. These findings suggest that 70.7% of learners who used mobile devices performed significantly better than those who did not.

Human Cognition and Vocabulary Learning

The seminal work of Ellis (1995) and the more recent of Allum (2004) emphasize not only what could be done with computers in vocabulary teaching, but also the importance of human cognition during vocabulary instruction. What is in a word to learn is an important preliminary question that precedes assessing the effectiveness of computer-assisted vocabulary instruction (CAVI). For a word to be stored in the human mental lexicon, a new orthographic pattern must be recognized first, and then semantic and phonological links must be made to facilitate future recollection of the new lexical item. Additionally, syntactic properties of the item must be learned along with its place in the lexico-grammatical environment, and its collocational or primal relations with other words. Accordingly, an effective vocabulary-learning framework should comprise frequent exposures to target vocabulary in an *explicit* mode of instruction while involving definitional and contextual lexico-grammatical information, a major pedagogical implication for CALL. Nakata (2008) persuasively argues that using multimedia, for instance, in vocabulary instructions reinforces lexical retention because they allow diverse access routes to the learned lexical item allowing a deeper memory trace for the learned vocabulary.

Further implications from cognitive psychology cited by Nakata (2008) imply that relying on context alone in vocabulary acquisition is not sufficient. Complementary activities that involve the explicit use of word lists are more inductive of learning and more efficient. In that context, academic vocabulary word lists, an immediate outcome of corpus linguistics research, become crucial since they "bring some order to what otherwise, would be a vocabulary chaos" (Gardner & Davies 2014:310). Nakata (2008) emphasizes that the use of word lists as the base of vocabulary instructions should be founded on spaced learning, and must allow several opportunities for vocabulary recollection because L2 vocabulary retrieval reinforces memory retrieval routes. Similarly, Mayer and Moreno (2003) propose that multimedia learning allows more effective learning based on having multiple input channels that allow auditory and visual dual coding, which reduces the cognitive load (the quantity and quality of information required to be processed) at the point of vocabulary instruction, which is another clear affordance of CALL.

CALL Efficacy for Vocabulary Teaching

Available literature empirically shows CALL's efficiency in vocabulary instructions. Tozcu and Coady (2004) found that learners who used CALL tutorials had higher gains in acquiring highly frequent vocabulary than the control group, and had a better recollection time. Kilickaya and Krajka (2010) compared the performance of an experimental group that used an online tool for vocabulary instruction and that of a control group that used paper and cards, and found that the former cohort outperformed the latter, and had showed longer vocabulary retention in delayed post-test. Similarly, Shoaei and Alavi (2016) report a significant impact for computer-assisted vocabulary learning using multimedia application in terms of vocabulary recollection and retention. A synthesis of the research available on computer assisted vocabulary acquisition is presented in Chiu (2013) meta-analysis, which

shows a positive medium effect size *(d = 0.754, p =0.000)* of CALL activities. The meta-analysis that scrutinized the empirical research of 16 L2 vocabulary CALL instructions also showed important findings related to learners' educational level and duration of instructions where the effect size of CALL vocabulary instructions for interventions that lasted less than a month is higher than in those of more than one-month duration. It also shows that high school or university students benefit more from CALL activities compared to younger learners. It is evident from the articles reviewed that academic lexico-grammar teaching using CALL is a territory with potential for further exploration.

MALL Efficacy for Vocabulary Teaching

As far as vocabulary teaching is concerned, MALL has three pedagogical affordances: 1) allows incremental vocabulary input over extended periods of time, which decreases cognitive load. 2) Allows repeated exposure to target vocabulary through either text messaging or smart phone applications, which accelerates the internalization of target vocabulary. 3) Allows opportunities of explicit and incidental vocabulary learning (Li et al. 2017). Using short text messaging has been a dominant medium of instructions in recent empirical research. Lu (2008) taught 14 words using text messaging to an experimental group during their commuting time, post-test result showed better vocabulary gains compared to control group. Gurocak (2016) complimented an academic vocabulary course with by sending target vocabulary items from Coxhead's academic wordlist via text messages to learners outside classroom over a period of eight weeks and reported high vocabulary gains for the experimental group in terms of semantic appropriateness and grammatical accuracy, and positive learners' attitude towards MALL vocabulary instruction. MALL's affordance to enhancing academic vocabulary was also reported in Li, Cummins and Deng (2017) who used frequent structured exposure via text messaging to highly salient vocabulary items from

Cobb's *VocabularyProfilers* academic wordlist and concluded that text messaging is "a malleable and gratifying means of vocabulary instructions" (P. 13). The cited results suggest that MALL, particularly text messaging can prove quite efficient in teaching academic vocabulary.

Using CALL in academic writing, then, does not necessarily require textual analysis using concordancing tools (data-driven learning) exemplified in the work of Kaur and Hegelheimer (2007), and Greaves and Warren (2007). A selection of academic vocabulary derived from Oxford Phrasal Academic Lexicon can be explicitly taught using Web 2.0 platforms such as Quizlet and Kahoot. It can then be reiterated and practiced via mobile phone texting applications, such as Whatsapp. Employing academic pedagogical wordlists to inform a computer assisted vocabulary-learning intervention that is paired with out-of-class practice made possible via smart phones' applications promise an interdependent, thorough and potentially highly effective application of CALL for English for Academic purposes vocabulary instructions.

Chapter three: Methodology

3.1 Research Intent

The reviewed literature unveiled the appreciable significance of general academic vocabulary along with the several pedagogical affordances for computer and mobile assisted instructions in relation to vocabulary acquisition. It also showed the value of input frequency and the cardinal importance of vocabulary recollection in reinforcing memory retrieval routes, and emphasized the fact that the maximum effect size for vocabulary acquisition intervention is produced when the intervention is rather short, that is one month in duration or less. Based on these contributions of previous research, the intent of this study is to design and appraise a general academic vocabulary instruction intervention geared towards improving the lexico-grammar of Saudi university students' written production. Target vocabulary is directly derived from Oxford Phrasal Academic Lexicon (OPAL). CALL is used as the main medium of instructions, in-class activities and exercises, and MALL is employed to compliment the intervention's activities outside class, and enhance target vocabulary's entrenchment and priming in student's academic repertoire.

3.2 Research Context

The reality of English as Foreign Language (EFL) teaching in Saudi higher education is exactly as unwelcoming as described in the literature, perhaps more imperfect, let alone English for Academic Purposes (EAP). Two major predicaments characterized the context of the present research, namely students' acquaintance with foreign language, and institutional preparedness to use technology in EFL teaching. On the one hand, Arabic L1, is used extensively to teach L2. The majority of students and teachers adamantly hold the belief that Arabic must be used in English language classes especially for the purposes of explaining grammar, and introducing new vocabulary. Teachers claim that using L1 in L classes is time

efficient and more productive in terms of new language processing. That claim is falsified by Alarabi (2016) who maintains that the real reason behind using L1 in EFL classes is teachers' lack of linguistic competence, and their desire to take instructional alternate routes. The immediate result of that behavior is students' inability to use target language in communication, which undermines their overall communicative competence. The concepts of *academic vocabulary* and *academic language* sounded entirely foreign to students who were immediately struck by the "novelty" of the idea. Accordingly, it is not a matter of fluency deficiency, but rather a deep-rooted linguistic incompetence. On the other hand, the university at which the experiment was conducted lacked essential technological infrastructure. Access to the computer lab was not possible; accordingly, students used their personal computers. Available delivery hardware was limited to a portable projector and a white board. Implementing a CALL experiment in this educational setting was a daunting challenge.

Prior to commencing the experiment, research ethical obligation form was completed and approved by the university, where the procedure of recruiting participants, getting their informed consent of involvement, handling participants' confidential information, and avoiding coercion were clarified, acknowledged and approved. Subsequently, necessary approvals were attained from Qassim University is Saudi Arabia where the Deanship of Educational Services (preparatory year program) officially corresponded with the University of De Montfort, UK and provided official consent for the researcher to conduct research and collect data.

3.3 Design

The reported study in the following sections is quantitative and fully experimental in nature with an experimental group and a control group that is intended to measure the exact efficacy of each component of the suggested delivery instruments on the written production of the selected populations using a pretest-post-test data collection format. The proposed study comprises 8 in-class two-hour sessions delivered over a period of one month, and 40 structured questions intended to reinforce the acquisition of target vocabulary outside classroom.

3.3.1 Delivery Instruments

1) Oxford Phrasal Academic Lexicon (OPAL).

Core sub-technical academic vocabulary that are not domain specific account for a considerable coverage of the words used in academic discourse because the method employed in selecting them considers two major factors, words' range and frequency. *Range* refers to the selected words' occurrence across various disciplines verified by using a large corpus that comprises millions of words from different academic domains. *Frequency* refers to the number of times the words' families occurs in the academic corpus (Coxhead 2000). Teaching words from pedagogical academic word lists guarantees principled vocabulary selection that is not based on teachers' intuition, and ensures that the words chosen are frequently employed in various academic texts. Academic formulaic language should be pedagogically viewed with equal measures of significance. Frequent lexical clusters can be thought of as extended collocations that systematically appear in academic texts at a frequency that cannot be predicted by chance, and contribute both meaning and cohesion to academic written production (Hyland 2012). While there were several available word and formula lists (Gardner & Davies 2014, Coxhead 2000, Simpson-vlach & Ellis 2010, Morley

2017), OPAL was selected for this experiment for a number of reasons. First, it comprises both academic words and formulas in a web-based user-friendly interface equipped with search bar that returns immediate results with examples. Second, it presents word lists and formula lists in the formats of sub-lists and functions respectively. Vocabulary sub-lists are categorized based on frequency where sub-list 1 has the most frequent, hence the easiest academic words while sub-list 10 has the least frequent; hence the most difficult. This feature allows easy selection of words that correspond to the language level of learners. Formula function categorization allows accessibility and navigation through the functions and their linguistic representations. Three, it integrates a word pronunciation facility which can allow better lexical retention through diverse access routes, and auditory and visual dual coding of learned words. Finally, OPAL comprises the most word academic word list, available as of January 2019, and it is directly linked to Oxford Learner's Dictionary of Academic English, which allows a wide range of examples that promise faster entrenchment and collocational priming of target vocabulary. After choosing OPAL, and based on the level of students determined by the university's placement test, subsets 1, 2, 3, and 7 were selected for the vocabulary intervention, every subset comprised 10 root words, a total of 40 words. Subsets 1, 2, and 3 represented the most frequent, highly salient root words in academic writing. Subset 7 represented a slightly less frequent set of words chosen in order to balance the difficulty level of the intervention so that it would not be too unchallenging. The intervention presented the following root words:

1- concept, policy, finance, procedure, derive, establish, require, specific, interpret, estimate.
2- effect, participate, consequence, perceive, impact, maintain, aspect, evaluate, obtain.
3- imply, sufficient, outcome, constraint, proportional, justification, validity, illustrate, component.

7- advocate, ultimate, foundation, empirically, prioritize, eliminate, infer, phenomenon, isolation.

In a similar vein, since hedging is, perhaps, the most prominent feature of academic language, a number of formulaic structures that denote cautious language were also selected from OPAL including, may, seem to be, possibly, thought to, and tend to, and introduced as part of the intervention. Formulaic language of other academic discourse functions such as exemplification, reference to evidence or previous research, comparison, addition, and concluding were also introduced but with less emphasis.

2) Reading Texts

In an attempt to construct academic/scholarly voice/language within the indisposed, conversational and generally faulty linguistic repertoire of the Saudi students, form-meaning mapping (Ellis et al. 2015) had to be accounted for. Words were introduced as learnable pairs of forms and their associated semantic function. Accordingly, Target vocabulary and formulaic language were contextualized in four short essays; each one was tailored to accommodate ten root words with various inflections and three to five formulaic constructs. Essays were color coded so that target lexical items (vocabulary or formulaic) and their collocational associations were distinguishable from the rest of the text.

3) Quizlet

Vocabulary acquisition research refers to two distinct modes of vocabulary learning namely, incidental and intentional learning. While incidental learning of vocabulary can lead to tangible gains in vocabulary acquisition, explicit focus on vocabulary learning leads to faster and more significant gains in terms of vocabulary retention (Schmitt 2008). Laufer (2005) reports 33-86% more words learned using explicit instruction compared to using incidental learning. Accordingly, research points at the direction of explicit vocabulary teaching in EFL

classrooms as a more effective method of vocabulary teaching. It also suggests that flashcards, digital or conventional, represent an effective explicit vocabulary-teaching tool, that allows students to retain more words in a shorter time (Nation 2001, Fitzpatrick et al. 2008, Sitompul 2013, and Hung 2015). As a free digital flashcards platform, Quizlet provides customizable card templates where target vocabulary, examples, and pop-quizzes can be presented and maneuvered. Being a web-based application, accessing it is quite easy from personal computers or tablets, and integrating word definitions for review is made possible through the editable user-friendly interface.

4) Text Messages

Several quantitative and qualitative studies (Lu 2008, Cavus & Ibrahim 2009, Gurocak 2016, and Li et al. 2017) proved that using text messaging in EFL learning environment can expand learners' vocabulary knowledge, and can allow acquisition of target vocabulary that is more permanent. Previous research also referred to learners' positive attitude towards vocabulary learning using text messages, and reported it as being more resourceful and more motivating compared to traditional printed formats. Accordingly, given the language level of participants, the relative short duration of the intervention, and the number of lexical items targeted, employing MALL was thought of as a cognitive advantage that could enhance the retention of newly introduced items. Therefore, a WhatsApp group that included all members of the experimental group was created, and intermittent text messages were sent from researcher to group members. Messages were intended to allow several opportunities for vocabulary recollection because L2 vocabulary retrieval reinforces memory retrieval routes.

3.3.2 Data Collection Instruments

1) Pretest-Posttest

Essay-writing tasks were used to collect linguistic data from control and experimental groups. Participants were instructed to write two 250-word opinion essays within 1 hour, one prior to the beginning of the intervention, and another at its end. Essay topics were modeled after IELTS task 2 writing tasks. The essay prompts were selected to engender different responses to similar central idea in order to avoid possible discrepancy in the written production's linguistic variables.

Pretest prompt: Some people think that modern technology is making people more sociable, while others think it is making them less sociable. Discuss both views and give your opinion.

Posttest prompt: 'Nowadays the way many people interact with each other has changed because of technology.' In what ways has technology affected the types of relationships that people make? Has this been a positive or negative development?

2) Rubric

A common definition for scoring rubrics is that they are descriptive/qualitative grading schemes developed to guide the rating of complex student work (Moskal & Leydens 2000). A rubric must have evaluation criteria, quality definition for each criterion at particular levels, and a scoring strategy (Dawson 2015). The benefits of using rubrics are many, but the most important elements include increasing judgement consistency among raters and across students, and providing valid judgements for students' performance that is unachievable by means of traditional writing tests. In the framework of the current study, an analytical rubric (versus a holistic rubric) was designed to measure six formalized criteria using specific descriptors. Prior to using a rubric for performance evaluation, however, the rubric was calibrated in order to answer several questions of scoring reliability and validity.

Validity of Scoring

The American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education (2014) maintain that "validity refers to the degree to which evidence and theory support the interpretations of test scores" (P. 11). Rubric validation hence is the process of collecting evidence to prove that the inferences made about students' performance and the manner in which the rubric interprets students' performance into quantifiable scores are scientifically sound. The most frequently examined evidence to support the validity of a scoring rubric include content-, construct- and criterion-related evidence.

Content-related evidence is concerned with the degree to which students' responses sample the content domain, and refers to rubric's ability to guide the rater to evaluate students' knowledge of the precise content area being assessed with no distraction from other qualitative features that should not influence the interpretation of students' responses. For instance, while developing a rubric for a chemistry-focused content, the teacher could unintentionally shift from the intended chemistry content to emphasizing the non-chemistry components of the task such as sentence structure or spelling. Accordingly, resultant scores would be more of a reflection of students' grammatical knowledge than their chemistry knowledge.

Construct-related evidence is concerned with the rubric's ability to measure constructs; internal processes of students not just unrepresentative manifestations of these processes. For instance, reasoning is an internal process, yet it might only be partially displayed in students' responses. A scoring rubric hence should contain criteria that evaluate both the product (the answer), and the construct/process (the explanation).

Finally, criterion-related evidence supports the extent to which students' performance is generalizable to other relevant activities. That is to say, the scores made possible by a rubric in the task being evaluated is valid if they suggest high performance practically outside the classroom.

Moskal and Leydens (2000) argue that the purpose of the intended assessment indicate which one of the three evidence types should be considered. Accordingly, clear learning objectives were set prior to developing the rubric used in the present study, evaluating criteria were then created, and a reflection on the link between objectives and criteria was carried out to examine each type of validity evidence. The framework for rubric design is illustrated in table 1 based on validation questions of evidence validity proposed in Moskal and Leydens (2000, P.3).

Learning Objective	Evaluation Criterion/ Descriptors	Criterion Validation
Acquiring the largest number of the 40 target vocabulary words in different inflectional forms	**Target Vocabulary Count.** Six to ten academic words were used. Three to five academic words were used. Two or less academic words were used.	The criterion does not address any extraneous content. It accounts for moderate lexical gains given the low linguistic level of participants.
Using the acquired vocabulary correctly (spelling-grammar-collocation)	**Target Vocabulary Usage.** S shows ability to always **(0 to 1 error)** use target words appropriately in terms of spelling, collocation and grammatical usage S shows ability to use target words appropriately in context most of the time **(2 to 3 errors)**, occasionally	It accounts for designed and incidental acquisition of collocation and syntactic environment.

	making mistakes with spelling, collocation or grammatical usage S is consistently unable to use target words appropriately **(more than 3 errors)** in terms of spelling, collocation or grammatical usage	
Improving the overall grammatical competence	**Holistic Sentence Structure & Context** Sentences are attempted with strong context that highlights S understanding of the meaning of the target vocabulary Sentences are attempted but do not contain context to support meaning of target vocabulary No sentences or very few sentences were attempted. All or most parts not completed. Attempted sentences do not offer context to support meaning of target vocabulary	Addresses intended aspect within the overarching lexical framework of the learning objectives.
Improving the overall academic tone	**Scholarly & Academic Tone** Strongly present Moderately present Nonexistent **Use of Cautious Language** S employs hedging markers	Accounts for the acquisition of academic formulaic sequences

	appropriately in written text S employs insufficient hedging markers. Claims occasionally sound too absolute. S does not employ any hedging markers or use them incorrectly.	
Improving the essay structure	**Essay Structure** The written production presents a clear thesis and follows correct structure of distinct introduction, body and conclusion The written production presents an unclear/incomplete thesis and/or follows an incomplete (one component is missing) or unbalanced (parts of the essay are not equal in length or focus) structure (introduction, body, conclusion) The written production is missing thesis and/or structure misses two or more components (introduction, body, conclusion)	Specifically measures the target aspect

Table 1: Framework for designing the Grading Rubric

Furthermore, criteria explanations and descriptors' definitions were provided to the two raters who volunteered to grade the pre- and post-tests using the following scoring instructions:

1- This assessment is lexically oriented. That is, vocabulary is the main subject of your judgement.
2- Your judgement should not be influenced by the mechanical characteristics of students' writing.
3- The count of academic vocabulary used based on the provided list is a very important metric. So kindly, make sure this is accurately calculated.
4- If the exact same academic word is used more than once in the same essay, it should be counted as one instance of use.
5- If the same academic root word is used in different inflectional forms, each instance should be counted as a new word.
6- Correctness of lexical items' usage is critical. Target vocabulary word must be used in the correct form and in the correct lexical environment.
7- Essay structure and theses clarity should be meticulously graded.

Important definitions:

1- **Hedging markers** refer to any word that limits the force of claims made in order to give the written production a more academic voice. Examples are (perhaps, likely, may, might… etc.)
2- **Scholarly & Academic Tone** refers to the formal, impersonal, objective voice that is characteristic of academic writing. It avoids the use of personal or emotional language, over-sweeping adjectives, and colloquialism.
3- **Essay structure** refers to essay's parts (introduction, body and conclusion).

Reliability of Scoring

In terms of reliability, Moskal and Leydens (2000) maintain that an evaluation rubric with explicitly clear scoring categories should enable consistent scoring notwithstanding different raters or the timing in which rating is completed. In that sense, two reliability metrics should be accounted for while designing a rubric, intra-rater reliability that is consistency of a single rater over time; and inter-rater reliability that is consistency across raters simultaneously. The first metric ensures that no external factors to the purpose of the evaluation are affecting the manner a in which a rater scores students' responses, for instance, a rater can become weary as he/she evaluates students' work, and hence devote less attention to critically analyzing responses over time. Accordingly, the same student response may receive different scores than he/she would have had earlier during the evaluation process. In their exhaustive review article, Jonsson and Svingby (2007) maintain that intra-rater reliability is investigated using

Cronbach's alpha with a reference alpha value that is above .70. In order to determine intra-rater reliability score for the two raters participating in the current research, each one was asked to use the designed rubric to rate the same short essays produced by 15 students studying an English for Academic Purposes (EAP) course in two different instances with an interval of two weeks. Each rater's scores were the analyzed using IBM SPSS 24 statistics package to obtain their individual Cronbach's alpha scores, and their scores were .783 for the first rater, and .769 for the second, denoting a generally sufficient level of intra-rater consistency.

Inter-rater reliability refers to the degree of consistent agreement between raters while using a rubric for scoring students' performance. Frequent scoring consensus refers to the fact that the rubric's descriptors are clearly distinguishable and easy to interpret, descriptors are attributed scores that are easy to calculate, and descriptors can be thought of as nominal data. To quantify inter-rater reliability, Jonsson and Svingby (2007) cite the use of Cohen's kappa to estimate the degree to which rating consensus vary from the rate expected by chance, and they maintain that Kappa values between .40 and .75 do represent fair agreement beyond chance. To evaluate inter-rater reliability the designed rubric can ensure, raters' scores of the 15 EAP students were analyzed using SPSS in the two instances with a two-week interval. Kappa scores for the two raters were .684 in the first instance, and .633 in the second denoting a fair level of consistency between the two raters beyond sheer chance.

3.4 Participants

The experimental group comprised 30 students in a Saudi University aged 18 to 25. Their first language was Arabic and their overall English language proficiency ranged between A2 and B1 on the Common European Framework of Reference's (CEFR) scale. Their language level was determined by the local placement test administered by the university. All but one

participant shared the same EFL background of studying English in governmental schools as of the secondary level of education (3 to 5 years of EFL instructions) where L1 was always used as the language of instruction in L2 classes, and teachers were never allowed to use authentic material. One participant studied in an international school. The control group comprised 15 participants of identical specifications to the experimental group, yet only four students sat for both the pre- and post-tests. None of the participants acknowledged living in an English-speaking country at any point of their lives, or studying English for Academic Purposes per se. All participants volunteered to participate in the present study, and acknowledged in writing non-coercive behavior on the part of the researcher throughout the study.

3.5 Procedure

Both experimental and control groups were requested to write the pre-test essay in class, then the intervention formally initiated by separating the control group cohort and allowing them to study from Cambridge's textbook *Unlock 2* following traditional Saudi unplugged teaching methods. The experimental group was initially introduced to the essentials of academic writing with special emphasis on the following features: the use of impersonal language, the meaning of general academic vocabulary, the form and structure of an essay. Consequently, the first set of academic vocabulary was introduced using Quizlet's digital flash cards. Contextualized academic vocabulary and formulaic language were then introduced using tailored short essay. At this point, very close attention was given to emphasizing the meaningful context of each lexical item, and guide students to consciously study how words or bundles syntactically behave, what patterns they creates and can be involved in, and how to recognize and independently create similar patterns. The intent was to instill the notion of linguistic patterns in the minds of participants to facilitate future production. Extensive

exercise was then introduced in order to explore target vocabulary in various contexts. After leaving class the following model messages was send to the created Whatsapp group:

- The definition (definition given) describes which of the following words? (multiple choices provided)
- The definition of the word (word given) is: (multiple choices provided)
- A more academic variation for the word (word given) is …….. (multiple choices provided)
- The correct word that collocates with (word given) is: (multiple choices provided)
- To write cautiously, which word of the following can be used? (multiple choices provided)
- Fill in the space with a word that limits the force of claims made. (multiple choices provided)

The same routine was repeated throughout the eight two-hour sessions, each time, new lexical items are introduced in class, followed by in-class practice in groups, then out of class word-recollection exercise using mobile phone. At the end of week four of the intervention, both experimental group and control groups were asked to sit for the post-test task under the exact same conditions of the pre-test. Two experienced raters volunteered to score the written production of both groups using the designed rubric. Statistical analysis was conducted using IBM SPSS statistics package version 24 for Windows.

Chapter four: Results and Discussion

4.1 Data Analysis

To conduct thorough analysis of data collected using the designed rubric, the pre- and post-test results provided by each rater were compared separately for both experimental and control groups. The dataset comprised seven paired variables per rater representing rubric's six criteria namely, target vocabulary count, target vocabulary usage, holistic sentence structure & context, use of cautious language, scholarly & academic tone, and essay structure, and the total score given for the complete written production. The rational for this level of analysis is to reveal the specific areas that were influenced by the intervention if at all. Consequently, two levels of analysis were used; the first is the *t*-test to evaluate the validity of the null hypothesis by comparing mean ratings of the pre- and posttests; hence proving/disproving statistical significance *p* of the intervention's results. The second is effect size represented by Cohen's *d*, which describes the mean difference between or within groups. The latter measure cannot be calculated using SPSS, accordingly it could be done either manually or using a specially designed calculator. In the present study, the calculator developed by David Wilson was used. It is freely downloadable from the following URL: http://mason.gmu.edu/~dwilsonb/downloads/ES_Calculator.xls. The rationale for using effect size in the subsequent analysis is that according to Plonsky (2015), the null hypothesis significance testing (NUST) alone can be unreliable, and can be easily influenced by the sample size, and it does not provide information about the extent of the relationship being examined. Conversely, effect size provides an accurate estimate of the actual strength of the relationship being examined. Finally, unlike *p* values, *d* values are scale free, which allows cross-study comparisons.

To conduct the analysis, all variables were coded with the prefixes pr1/2, po1/2 to stand for pre- and posttest results for the first and second raters. A standard *t*-test was carried out using IBM SPSS statistics version 24 for windows to compare the results of pre- and posttests, which represent the performance of both control and experimental groups. Consequently, the effect size *d* was calculated separately using David Wilson calculator. Results were then compared to findings of previous results in literature review, which will be thoroughly discussed in the following section.

4.2 Results

Prior to conducting the experiment, the following research questions were put forward:

1. Can Computer Assisted Language Learning (CALL) improve pre-intermediate Saudi university students' academic vocabulary in terms of quantity and quality?
2. Can CALL improve the grammatical and/or structural features of pre-intermediate Saudi university students' academic writing?
3. Can CALL improve the overall academic voice in the written production of pre-intermediate Saudi university students?

Accordingly, the researcher proposed the following hypotheses:

1. Using digital flash cards afforded by the online platform *Quizlet*, and the academic vocabulary and phraseology provided by the web-based Oxford Phrasal Academic Lexicon (OPAL) will enhance the experimental group's academic vocabulary, and will afford more reliable vocabulary internalization and operationalization measurable by analyzing the results of the posttest.
2. The combined pedagogical forces of computer and mobile assisted language learning will enable a more effective retention of academic vocabulary and phraseology.

3. The academic voice installed in the lexico-grammar of academic language will consequently be enhanced through the use of impersonal and cautious language.

4.2.1 Results for research question one

Investigating the first two variables, namely target vocabulary count and usage shows that the *p*-value for the variables measured through the pre- and posttests for the experimental group by the two raters is .000, which is less than the level of significance benchmarked at .05. The null hypothesis is therefore rejected denoting a significant statistical difference between the mean scores of the experimental group's work before and after the intervention.

		Paired Differences					*p*-value
		Mean	Std. Deviation		95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	pr1Target V Count - po1Target VCount	-1.2333	1.0726		-1.6339	-.8328	.000
Pair 2	pr1Target VUsage - po1Target VUsage	-1.2667	1.5071		-1.8294	-.7039	.000

Table 2: Paired Test for Vocabulary-related Variables for two Raters

To calculate the effect size *d* for the paired results, the difference between means of pre- and posttest scores is divided by the difference between their standard deviation using the simple formula $d = \frac{M1-M2}{SD}$. Table 3 shows means and standard deviations of vocabulary-related variables.

		Mean	N	Std. Deviation
Pair 1	pr1Target V Count	.133	30	.3457
	po1Target VCount	1.367	30	.9994
Pair 2	pr1Target VUsage	.233	30	.7279
	po1Target VUsage	1.500	30	1.3834

Table 3: Vocabulary-related variables' Means and Standard Deviations

Accordingly, based on the assessment of the two raters, the effect sizes for vocabulary count and correct usage are 1.6 and 1.14 respectively. To understand the meaning of these figures, Plonsky (2015) cites a general scale for interpreting *d* values in L2 research (Table 4).

Effect size	Small	Medium	Large
d-value between groups	0.40	0.70	1.00
d-value within groups	0.60	1.00	1.40

Table 4: Benchmarks for interpreting *d*-value in L2 Research

In the light of the benchmarks cited, *d*= 1.6 denotes a large effect size for the intervention in terms of the number of academic vocabulary used by the experimental group, while *d*= 1.14 denotes a medium effect size for the intervention in terms of academic vocabulary use in the correct form and the correct lexical environment.

4.2.2 Results for research question two

Results for research question two can be obtained by scrutinizing variables three and six that assess the correctness of holistic sentence structures of the treatment group's written production, and the form correctness of written essays structure. As illustrated in table 5, the *p*-value of the paired test for variable three for rater one is slightly different from that of rater two, yet both denote statistically significant difference between the results of the pre- and

posttests, where *p*= .002 and .001 respectively. However, the results show a small effect size if compared to L2 research benchmarks, where *d*= .59 for rater one and .77 for rater two, denoting that students seem to have improve in terms of the overall grammatical accuracy of their written production, yet not quite dramatically.

		Paired Differences					*p*-value
		Mean	Std. Deviation		95% Confidence Interval of the Difference		
					Lower	Upper	
Rater 1 Pair 3	pr1Holistic Sentence Structure and Context - po1Holistic Sentence Structure and Context	-.3333	.5467		-.5375	-.1292	.002
Rater 2 Pair 3	pr2Holistic Sentence Structure and Context – po2Holistic Sentence Structure and Context	-.4000	.5632		-.6103	-.1897	.001

Table 5: Paired Test for Variable 3, Both Raters

Results for variable six that assesses essay form correctness seem to be of a better value compared to variable three. The *p*-value of the paired test denotes a significant statistical difference between the results of the pre- and posttests for both raters, *p*= .000 and .000, which again rejects the null hypothesis. Unlike variable three, the effect size *d*= 0.94 for the first rater, and 1.08 for the second. The *d*-value cited suggests that the intervention seems to have a medium effect size when it comes to improving essay structure. Taken together, the effect size of the two variables suggests that experimental group seem to have improved

slightly in terms of the overall grammatical accuracy of their written production, and moderately in terms of their control over essay structure.

		Paired Differences					p-value
		Mean	Std. Deviation		95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 6	pr1Essay Structure - po1Essay Structure	-.6667	.8023		-.9662	-.3671	.000
Pair 6	pr2Essay Structure – po2Essay Structure	-.7333	.8277		-1.0424	-.4243	.000

Table 6: Paired Test for Variable 6, both Raters

4.2.3 Results for research question three

Research question three can be answered by analyzing variables four and five that indicate the use of a major academic writing characteristic namely, hedging, and the salience of scholarly academic tone described as the formal, impersonal, objective voice that is characteristic of academic writing. Scholarly academic voice avoids the use of personal or emotional language, over-sweeping adjectives, and colloquialism. As illustrated in tables 7 and 8, the results of the paired test for the two variables by the two raters show a *p*-value of .001 denoting significant difference between the results of the pre- and posttests, yet at a small effect size, where *d*= .6 and .65 for variable five, and .76 and .49 for variable six. These results indicate that the intervention may have led to a slight improvement in the scholarly voice of the experimental group.

		Paired Differences					p-value
		Mean	Std. Deviation		95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 4	pr1Use of Cautious Language - po1Use of Cautious Language	-.4667	.6814		-.7211	-.2122	.001
Pair 5	pr1Scholarly and Academic Tone - po1Scholarly and Academic Tone	-.5333	.7761		-.8231	-.2435	.001

Table 7: Paired Test for Academic Tone-related Variables Rater 1

		Paired Differences					p-value
		Mean	Std. Deviation		95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 4	pr2Use of Cautious Language – po2Use of Cautious Language	-.5333	.7761		-.8231	-.2435	.001
Pair 5	pr2Scholarly and Academic Tone – po2Scholarly and Academic Tone	-.3000	.7022		-.5622	-.0378	.026

Table 8: Paired Test for Academic Tone-related Variables Rater 2

4.3 Discussion

The results of the experimental group can be categorized into three main areas, lexical, grammatical, and academic/scholarly. In the discussion section, each set of results shall be interpreted in the light of the findings of previous studies and the results of the control group with the purpose of explaining the meaning of the obtained numerical observations in the context of computer assisted language learning and academic writing pedagogy domains. The influence of the research setting will be referenced as a major determinant of the results obtained in terms of the prevailing L2 pedagogical environment, experimental group's engagement, and theoretical and methodological maturity of the implemented intervention.

4.3.1 Lexical effect of the intervention

The results of the experimental group showed high efficacy in the recollection and employment of target academic lexical items *d*= 1.6. This level of lexical engagement was supported, albeit at a medium effect size *d*= 1.14, by the ability to use target academic vocabulary and formulaic language in correct collocation and colligation patterns. This observation denotes that learners seem to have managed to acquire lexical knowledge that is not strictly word-based, and lends empirical evidence to the assumption that the treatment group learned academic lexical sequences that are rich in academic patterns and collocations, yet rather rudimentarily.

It is important to note here that the empirical research on the efficacy of CALL in vocabulary instruction is predominantly computer-focused. That is to say, incorporating CALL and MALL is hardly attempted in the available literature. Therefore, comparing the efficacy of the present study to that of previous research would entail synthesizing results from two separate lines of research. With that in mind, the results of the two variables being discussed seem to correspond to and compliment empirical findings in the available literature. To start

with, the *d*-value of the two variables being studied is quite comparable to the effect sizes attained in the literature of CALL-based vocabulary instruction. In his meta-analysis of sixteen studies, Chiu (2013) cites a large effect size *d*= 1.57 for CALL-based vocabulary instructions that are one month or less in duration, a large effect size *d*= 1.03 for university and secondary education participants compared to participants in elementary stages, and a large effect size *d*= 1.11 for not including games in the intervention. The current study was four weeks in duration; it targeted university students, and did not involve educational games. Accordingly, the reached effect size of the current treatment seems to be consistent with the overall efficacy of the sixteen studies of the meta-analysis despite the different contexts.

It is distinctly important to note here that the seemingly insuperable language difficulties holistically manifested by Saudi university students cited in Alfadda (2012) and Alrabai (2016), and represented by the treatment group seem to have been partly resolved by using MALL represented by using mobile text messages to complement CALL instructions. Consistent with assertions made by Li et al. (2017), including a MALL activity in the vocabulary intervention seems to have resulted in decreasing the cognitive load of the newly introduced lexical items, both individual words and formulaic chunks, and created what might be termed a "cognitive continuum" with multiple input channels that allowed frequent exposure to target lexical items. That continuum may have accelerated the internalization of target lexical items, hence their strong presence in the posttest results. The results of the intervention's lexically related variables; therefore, are comparable to the results of other empirical research in the available literature. The positive students' attitude towards using mobile applications for texting as a medium of vocabulary instruction cited in Lu (2008), Cavus and Ibrahim (2009), and Gurock (2016) seems to have constituted a pedagogical value that positively influenced the acquisition of academic lexical items.

On a similar note, the meaningful effect size rendered by the present study resonates with the quantitative results of Sung et al. (2015) meta-analysis that measured the overall effectiveness of MALL through scrutinizing the results of 43 journal articles and 2 doctoral dissertations. Indeed, the largest proportion of studies included in the meta-analysis sampled elementary school students, yet a substantial 26.7% of subjects were college students, the most frequent treatment duration was 1-6 months, most studies 73.3% used handheld devices, and the most studied skill was vocabulary. The above-mentioned criteria imply that the present study has been conducted under conditions well within the meta-analysis's scope of variables, accordingly, the conclusions arrived at by the present study can be compared to the results of the meta-analysis. The findings of the meta-analysis suggest a moderate effect size for MALL; that is 70.7% or learners who used mobile devices performed significantly better than those who did not use them. A result that may clarify the high lexical effect size of the present intervention.

Comparing the mean scores for lexical development of both experimental and control groups' performance reveals that given the exact learning circumstances apart from the intervention procedures, significant differences can be seen between the control and treatment groups. Despite the fact that the mean scores of the treatment group for the two lexical variables were significantly less than the control group's mean scores for the same variables in the pretest, the mean scores for the treatment group were markedly superior to the scores of the control group in the posttest, suggesting significant gains for the intervention.

	Variable 1 Target V Count		Variable 2 Target V Usage	
	Mean Pretest	Mean Posttest	Mean Pretest	Mean Posttest
Rater 1	0.25	0.75	0	1
Rater 2	0.25	0.75	0	1

Table 9: Mean Scores for Control Group's Vocabulary-related Variables out of 3 Points per Variable

	Variable 1 Target V Count		Variable 2 Target V Usage	
	Mean Pretest	Mean Posttest	Mean Pretest	Mean Posttest
Rater 1	0.13	1.36	0.23	1.5
Rater 2	0.13	1.36	0.23	1.5

Table 10: Mean Scores for Treatment Group's Vocabulary-related Variables out of 3 Points per Variable

4.3.2 Grammatical effect of the intervention

Despite the fact that English grammar was not explicitly taught in the present intervention, research assumptions were formulated to anticipate progress on the grammatical-structural level based on the density and variety of target lexical items. There was no sufficient empirical evidence in available literature that supports acquiring grammatical skills using CALL, albeit Nutta (1998), however, a modern language acquisition theory, namely usage-based learning (Beckner et al. 2009) stipulates that lexicon and grammar are highly

intertwined rather than separate, hence the assumption that incidental grammatical development might occur.

The results pertinent to grammatical development seem to echo the cited pedagogical challenges Saudi second language learners are facing. The existing educational limitations do not seem to impede the transition from L2 basic interpersonal communicative skills to L2 cognitive academic language proficiency, but rather the progress from L1 basic interpersonal communicative skills to L2 basic interpersonal communicative skills, including academic language competence. The problem of using L1 as a medium of instruction as cited in Alarabi (2016), for instance, minimizes exposure to L2 lexico-grammatical components, and undermines the associated cognitive processes, and consequently impairs the competence required to engage L2 at an appropriate level of grammatical accuracy. The effect of this widespread practice among other administrative and cultural factors (Alarabi 2016) seems to be observable in the results of the present study.

In order to measure grammatical and structural gains of the intervention, grades of variables three and six were analyzed. It can be observed that there seems to be a significant statistical difference between the pretest and posttest results for variable three p= .001 and .002 for raters one and two, and for variable six p= .000 and .000 for raters one and two. However, the actual effect size seems to range between small and medium compared to L2 research benchmarks. To elaborate on this point, the paired raters' scores illustrated in Table 11 indicate similar *d*-values for variable three, namely Holistic Sentence Structure, and dissimilar effect sizes for variable six; Essay Structure.

	d-value Holistic Sentence Structure	*d*-value Essay Structure
Rater 1	0.59	0.94
Rater 2	0.77	1

Table 11: Effect Size for Grammar-related Variables per Rater

A high level of linguistic deficiency was anticipated for all participants in the review of literature, which is why target lexical items and their grammatical environments were presented in the form of contextualized essays rather than individual word lists. Effort was exerted during the intervention to emphasize the importance of collocation patterns, and the inseparability of form and meaning. The exercises and text messages were also carefully designed to present and assess a comprehensible input that samples a moderate level of academic production. Although the paired test results seem to show significant difference between the grades of the pre- and posttests of the treatment group, the actual effect size that occurred is small for sentence structure and small/medium for essay structure. The researcher believes that the immediate reason for this limited effect size is students' linguistic incompetence manifested in the pretest essays. The pretest results for both control and treatment groups indicated a limited and vastly grammatically flawed written production. The word count of the pretest essays could be as less as ten words in some cases, and they entirely lacked structure and form, i.e. no introduction, thesis statement, topic sentences, supporting details, or conclusions. Some pretest essays comprised only simple mind maps and diagrams of fragmented ideas with little or no substantial content. Therefore, there was indeed a visible difference in the form and structure of essays in the posttest since the treatment group were incidentally introduced to the different parts of the formal essay, and a brief explanation was provided when necessary.

Comparing the performance of the pre-and posttest results of the treatment and control groups (Tables 12 and 13) reflects better gains for the treatment group for the grammar-related variables. The probable reason for such linguistic disparity, though marginal in both cases, is twofold. The first, academic writing per se, as an independent writing register with conventionalized lexico-grammatical features is out of Saudi university-level education's focus, which suggests lack of teaching approaches and curricula that introduce general academic phraseology. The second, there is the learners' disinterest in; hence demotivation to interact with traditional methods of teaching, which do not involve the use of technology.

	Variable 3 Holistic Sentence Structure		Variable 6 Essay Structure	
	Mean Pretest	Mean Posttest	Mean Pretest	Mean Posttest
Rater 1	0.1	0.4	0.9	1.6
Rater 2	0.6	0.4	0.8	1.5

Table 12: Mean Scores for Treatment Group's Grammar-related Variables out of 3 Points per Variable

	Variable 3 Holistic Sentence Structure		Variable 6 Essay Structure	
	Mean Pretest	Mean Posttest	Mean Pretest	Mean Posttest
Rater 1	0.0	0.0	0.5	0.5
Rater 2	0.0	0.0	0.5	0.5

Table 13: Mean Scores for Control Group's Grammar-related Variables out of 3 Points per Variable

4.3.3 Scholarly voice effect of the intervention

To discuss the intervention's results for academic and scholarly voice, variables four and five, namely The Use of Cautious Language, and Scholarly and Academic Voice were employed. The use of cautious language or hedging means employing lexical devices such as *perhaps, may, seems to* etc., to limit the force of claims made by academic writers, and it is a dominant characteristic of academic language (Chen & Baker 2010, Hinkel 2005). Scholarly voice was defined for the two raters of the present study as the formal, impersonal, objective voice that is characteristic of academic writing. It avoids the use of personal or emotional language, over-sweeping adjectives, and colloquialism. Accordingly, the two raters had a clear understanding of what to evaluate in the pre- and posttests. The paired test refers to statistically significant difference in the performance of the experimental group where p= .001 for both raters for hedging and .001 and .026 for scholarly voice. This relative statistical significance can only be adequately interpreted in the light of the generated effect size. The *d*-value for the two variable (Table 14) indicate small effect size for the treatment group.

	d-value Use of Cautious Language	*d*-value Use of Scholarly Voice
Rater 1	0.6	0.7
Rater 2	0.6	0.4

Table 14: Effect Size for Academic Voice-related Variables per Rater

Once again, very scarce empirical research in available literature, outside data-driven learning, that examines the use of academic formulaic sequences in the context of CALL and MALL to introduce a change in EFL students' academic repertoire. The present study's results; however, are consistent with the work of Gurocak (2016) who employed Coxhead's (2000) academic word list and text messaging as the means of delivery in a short vocabulary

intervention that showed statistically significant gains for the experimental group. Results are also consistent with Li, Cummins and Deng (2017) who used frequent structured exposure via text messaging to highly salient vocabulary items from Cobb's *VocabularyProfilers* academic wordlist and concluded that text messaging is "a malleable and gratifying means of vocabulary instructions "(P. 13). It could be noted here that the present study explores what may be considered a new territory for CALL where basic academic features and phraseology are introduced to EFL students. Its effect size, while small, may represent a significant addition to the available body of research available on the topic. Examining the mean scores of the control and treatment groups for academic voice-related variables may shed more light on this assertion.

	Variable 4 Use of Cautious Language		Variable 5 Scholarly and Academic Voice	
	Mean Pretest	Mean Posttest	Mean Pretest	Mean Posttest
Rater 1	0.86	1.33	0.56	1.1
Rater 2	0.86	1.4	0.53	0.83

Table 15: Mean Scores for Treatment Group's Academic Voice-related Variables out of 3 Points per Variable

	Variable 4 Use of Cautious Language		Variable 5 Scholarly and Academic Voice	
	Mean Pretest	Mean Posttest	Mean Pretest	Mean Posttest
Rater 1	0.5	0.5	0.25	0.75
Rater 2	0.5	0.5	0.25	0.5

Table 16: Mean Scores for Control Group's Academic Voice-related Variables out of 3 Points per Variable

Examining tables 15 and 16 reveals that the control group did not register significant gains in the two variables under scrutiny compared to the treatment group. These results may imply that while it might be known to language instructors who teach using non-computer-assisted methods, register-specific phraseology of academic writing is nowhere to be found in Saudi EFL curricula. It can also imply that not using technology in EFL instructions for the control group of the present study foreshadowed their underperformance.

4.4 Qualitative Findings and Final Comments

Consistent with cognitive psychology research, the results of the present study suggests that quick and ubiquitous complimentary activities such as text messaging in the case of this intervention that prompt the explicit use of vocabulary can increase the efficacy of vocabulary instructions introduced by CALL, as they allow several opportunities for vocabulary recollection. The large effect size of all intervention's variables together d= 1.37 for both raters suggests that the combined pedagogical forces of computer and mobile assisted language learning may enable a more effective retention of academic vocabulary and phraseology. It was also found that the intervention addressed one of the major problems faced by Saudi EFL students, namely linguistic disinterest, since it stimulated students'

intrinsic motivation, and allowed them to experience academic language instructions, perhaps for the first time, using a cognitively stimulating technology-based pedagogical model.

Also consistent with modern pedagogical research, selecting academic vocabulary from an academic word list was positively viewed by participants in the treatment group, did prove to adequately prioritize vocabulary choice in a manner that allows instructions to be as cognitively beneficial as possible.

Chapter five: Conclusion

5.1 Summary of the Research

This study aimed to investigate the pedagogical value of incorporating computer and mobile assisted language learning to teach basic academic writing skills to pre-intermediate university students in the challenging English as a foreign language environment of Saudi Arabia. To that end, an intensive four-week intervention was designed observing current CALL and MALL research trends where basic academic language vocabulary, phraseology, and lexico-grammar were introduced using digital flash cards afforded by *Quizlet* platform. The intervention's target lexical items were afforded by *Oxford Phrasal Academic Lexicon* (OPAL), a cognitive wordlist that has been recently compiled where highly salient core academic vocabulary that are not domain specific were grouped in sub-lists based on their frequency. Four very frequent, hence relatively easy sub-lists of ten words each were selected to be taught in order to match the linguistic level of the experimental cohort. Moreover, short lexical chunks that are characteristic of academic language afforded also by OPAL were selected to be taught in the intervention along with one major conventionalized feature of academic language, namely hedging, i.e. the use of cautious language. Four essays were then tailored to contextualize all target lexical items so that every sub-list of ten words and a number of academic formulaic items were contextualized per essay to facilitate their presentation to learners.

Following to selecting and contextualizing target language, necessary formal permissions to conduct the experiment and collect data in a Saudi university commenced. Once approved, thirty participants for the experimental group and four for the control group were heterogeneously selected to represent a specimen of Saudi pre-intermediate English language learners. Data were collected using pre-/post-test format; accordingly, the two groups were

instructed to write a short essay of 250-300 words then experimental group started the four-week CALL-MALL intervention, while the control group started the university's regular four-week intensive preparatory course. A grading rubric was designed and calibrated for measures of reliability and validity to assess six particular variables that were intended to confirm of negate the following research questions:

1. Can Computer Assisted Language Learning (CALL) improve pre-intermediate Saudi university students' academic vocabulary in terms of quantity and quality?
2. Can CALL improve the grammatical and/or structural features of pre-intermediate Saudi university students' academic writing?
3. Can CALL improve the overall academic voice in the written production of pre-intermediate Saudi university students?

Accordingly, it was hypothesized that:

1. Using digital flash cards afforded by the online platform *Quizlet*, and the academic vocabulary and phraseology provided by the web-based Oxford Phrasal Academic Lexicon (OPAL) enhanced experimental group's academic vocabulary, and afforded more reliable vocabulary internalization and operationalization measurable by analyzing the results of the posttest.
2. The combined pedagogical forces of computer and mobile assisted language learning enabled a more effective retention of academic vocabulary and phraseology.
3. The academic voice installed in the lexico-grammar of academic language was consequently enhanced through the use of impersonal and cautious language.

Post-test results were collected by means of short essay writing in a topic that is similar but not identical to that of the pre-test to control for task complexity and language variations. After collecting data, two experienced raters were assigned by the Saudi university to grade

the results of the pre- and post-test results. Intra- and inter-rater reliability assessments were conducted to ensure the validity of the grading process, and then clear detailed grading instructions were provided to both raters in order to guarantee the highest level of consistency and to ensure that raters are not distracted by any writing features that are not measurable by the rubric. The results of the two raters' grading were then coded and analyzed using IBM SPSS statistics version 24 for windows, then the intervention's effect size was calculated separately using David Wilson's calculator.

Results of the *t*-test for each pair of the six variables represented an answer to one of the three research questions. For vocabulary related variables, a statistically significant difference between the pre- and post-test results was observed with a large effect size (*d*= 1.6). As for grammar and structure-related variables, and academic tone variables, and while statistically significant differences between the results of pre- and post-tests were observed, small to medium effect size (*d*= .57) and (.76) respectively. The research findings suggest that the proposed CALL-MALL intervention seem to have affected a large difference in terms of the use of academic vocabulary, and smaller gains in terms of grammatical and the overall academic voice of the experimental group. When comparing the results of the experimental and control groups; however, the intervention shows to have caused higher gains compared to the traditional textbook method.

5.2 Pedagogical implications

It seems that based on the findings of the present study, the combined pedagogical forces of CALL and MALL have the potential to overcome the characteristic linguistic incompetence of Saudi university students. Accordingly, the present study may have the following academic L2 teaching implications.

Firstly, pedagogical academic word lists can be a valuable asset to prioritize vocabulary teaching in the Saudi context. There could have been skepticism about the value of pedagogical word lists in an L1-dominant L2 classrooms, but when allowed the chance, learners tend to take interest in, and capitalize on the use of contextualized words from an academic vocabulary list as a way to understand academic language conventionalized patterns without interference from teacher intuition.

Secondly, designing an English for Academic Purposes (EAP) course that presents a balanced technological, pedagogical, and content knowledge may integrate CALL in EFL settings in a way where the use of computers complements rather than supplement language instructions so that the learning experience is enhanced with the resources and opportunities made available by computers and would not be available otherwise.

Finally, MALL can prove to be a valuable supplement to a CALL-based EAP course, especially if used for texting target lexical items at regular intervals. While vocabulary teaching mobile applications are available for public use, texting seem to have a significant effect in the Saudi context, especially because the use of smart mobile phones is part of the Saudi culture.

5.3 Research Limitations

While the study showed valuable gains for CALL, a number of design concerns should be taken in consideration while interpreting its results. Because of cultural constraints, and to abide by ethical guidelines of research, only thirty participants sat for the pre-, post-tests, and attended the four intervention sessions. This number of participants, while produced statistically significant results may not allow much generalization latitude. On a similar note, the number of the control group was very small and may not adequately reflect a realistic statistical value for the scores of its participants.

On a different note, the number of lexical items selected was limited to forty vocabulary items and less than ten formulaic language items. While this small number of lexical items was dictated by the linguistic level of participants, the duration of the intervention could have allowed more target vocabulary, which could have increased the pedagogical value of the intervention. These limitations, while true, should not obscure the significant effect size produced by the study, and should allow the findings of the present research to be viewed through a fairly positive lens.

Along similar lines, the treatment group comprised pre-intermediate university students. While the intervention yielded a generally acceptable effect size, participants with higher level of English language could have produced higher effect size. Explaining the notion of academic vocabulary to struggling L2 students constituted a large cognitive load that required long processing time on their part, which led to small gains on the academic voice variables, as participants did not succeed in recognizing and appropriately using the criterial features and conventions of academic prose. This is because they did not have the lexical or grammatical control required for academic writing. Therefore, raters seem to have perceived participants' written production as unstructured and/or overly personal.

Similarly, the low L2 proficiency level of participants limited not only the number of taught lexical items, but also the range of taught academic writing skills. For instance, it was not possible to introduce important academic writing skills such as paraphrasing because the lexico-grammatical repertoire of participants did not allow such sophisticated level of instruction. The vocabulary teaching; therefore, sounded quite mechanical and was maintained at a rather rudimentary level, where further development of participants' lexical fluency was not possible.

Finally, in terms of design, on the one hand, the pedagogical value of CALL and MALL in teaching academic vocabulary was not put to test in a longitudinal format. That is, there was no delayed post-test to measure participants' retention learning of taught lexical items and academic features beyond the initial post-test. Hence, there is no evidence that the intervention employed in this study could prove effective on a longer scale. On the other hand, relying solely on one web-based application during in-class vocabulary instruction, namely, Quizlet created a rather redundant and sometimes monotonous atmosphere, and to that end, a variation in the used CALL applications could have created a more engaging vocabulary-learning environment.

Future research directions suggested by the present study point towards more synthesis of computer and mobile assisted language learning tools and methods in Saudi higher education contexts. Future research endeavours could focus studying the possibility of using CALL-based methods to teach academic grammatical features without which Saudi university students may be unable to develop a full range of academic competence.

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Appendix:

1- Ethic Form, participant consent form and information consent sheet:

For Admin Use: DD/MM/YYYY			
Log Ref:		Version Number:	

Faculty of Arts, Design and Humanities

Ethics Application Form

TAUGHT STUDENT (BA, BsC, MA, MsC)

Please complete section A and B in the first instance

If any ethical issues are identified in section B, please continue to complete the rest of the form

Only electronic versions of the forms must be completed

Forms must be checked and signed by your Tutor in the first instance

For resubmissions please ensure that you track all changes

All notes highlighted in orange indicate where further action may be required by you (the applicant) or additional information may be suggested to assist you with the completion of this form

ADH Ethics Overview Guide, sample application forms, supporting document templates and submission deadline dates and links to university guidance can be located at the ADH Ethics website

If your research involves using 1) human tissue or fluid samples or 2) animals, you MUST seek guidance from the ADH Head of Research Ethics before planning the project.

Section A: Researcher Details

This section is a mandatory requirement and MUST be completed by ALL applicants

Once you have completed this section please complete **Section B**

1. Researcher Details					
First name:	HAIFA		Surname:	ALRESHEEDI	
DMU e-mail address:	P2510819@my365.dmu.ac.uk				
School (please indicate with a tick ✓):					
Visual and Performing Arts		Design		Humanities	✓
Architecture					
Study Level (please indicate with a tick ✓):					
Undergraduate (BA, BsC…)		Taught Postgraduate (MA, MsC…)	✓		
If you are an academic member of staff, PhD or MPhil student please do not use this form. Please complete the PGR and Research Staff Ethics Application form available on the ADH Ethics website.					
For Student Submissions Only:					
Module Title:	Research Methods				
Module Tutor/ Supervisor name:	Dr Jie Liu				

Section B: Disclaimer

This section is a mandatory requirement. ALL fields MUST be completed by ALL applicants to ascertain if ethics approval is required

2. Activity Declaration **(Tick ✓ as applicable all of the following questions and refer to the notes on the right)**	**YES**	**NO**
Does the research involve human or animal participants, **human data *** (including observational study)?	✓	
Does the research present an indirect or physical risk to participants (human or animal)?		✓
Does the research involve any activities which may pose a risk to the environment?		✓
Does the research involve observing, interacting or otherwise with children (under the age of 18) or with **adults at risk ****?		✓
Does the research raise ethical issues due to the potential social or environmental implications of the study?		✓
Does the research re-use previously collected or archived personal data which is sensitive in nature, or enables the identification of individuals?		✓
Does the research involve topics concerned with the following 'sensitive research' areas: illegal activities, including the collection of source data, e.g. ethics statistics, or access to		✓

Tutor/Supervisor use only *			
Tutor/Supervisor Name:	Dr. Jie Liu	Date:	DD/MM/YYYY 9/05/2019

PLEASE NOTE:

If the applicant answers YES to one or more questions in section 2

It is recognised that certain ethical issues have been identified which, depending on the level of risk may require formal assessment by Faculty Research Ethics Committee (FREC) or Design Research Ethics Sub-Committee (DRESC) before undertaking any data collection associated with the proposed research activity.

To obtain approval the applicant MUST complete ***all fields in Section C – H*** *of this application form. Fully completed ethics forms MUST be submitted for checking, authorisation and risk assessment by the applicant's tutor in the first instance, who MUST complete section 13 of this form.*

****** If the applicant answers NO to all questions in section 2***

It is identified that there are NO ethical issues and the proposed study does not require formal FREC assessment.

To confirm that there are no ethical risks identified the applicant must complete this section of the form and forward onto their tutor for authorisation. ***For data recording purposes this application MUST be submitted to the following e-mail address: ADHethics@dmu.ac.uk by the tutor (copying in the applicant) from a DMU e-mail account***

Section C: Project Proposal

This section MUST be completed by the applicant if they marked YES to one or more questions in section B

Once you have completed this section please complete the rest of this form.

** **Human data** may be defined as non-numerical information (e.g. opinions, preferences, responses, ideas) collected from human beings through structured or unstructured methods (e.g. interviews, surveys, questionnaires or focus groups)*

*****Adult at risk** is defined by the Department of Health as 'a person aged 18 years or over who is or may be in need of community care services by reason of mental or other disability, age or illness; and who is or may be unable to take care of him or herself, or unable to protect him or herself against significant harm or exploitation', Department of Health paper, 'No Secrets' https://www.gov.uk/government/publications/safeguarding-policy-protecting-vulnerable-adults/sd8-opgs-*

3. Project Details			
Project Title:	Investigating the Efficacy of Flexible Language Acquisition Project (FLAX) in Developing Academic Writing: The Case of Saudi University Students		
Project Start date:	DD/MM/YYYY 20/05/2019	Expected End Date	DD/MM/YYYY 14/09/2019

Project Outline:

Give a brief overview - Recommended: list bullet points. For examples see sample application form

Subject area and background of the study:

- The study intends to explore the difficulties in academic writing in both individual words and phrases for example, *in term of* among university Saudi students
- As an English language teacher in Saudi university, I noticed that it is a common difficulty for Saudi students to write academic English, so it is very important for me to investigate what the difficulties are in order to help them to learn better. Also, this study will help me finish my MA dissertation.
- The research will be conducted in Kingdom of Saudi Arabia.
- This research is not being funded.
- This study will consist of the whole body of MA study.

Purpose, aims and objectives of the research:

- The purpose of this study is to investigate the extent to which Computer-assisted Language Learning (CALL) can develop the lexico-grammatical competence of university-level Saudi students. The research intends to answer the two following research questions:
  - How can corpus-based instructions, such as an application of Computer-assisted Language Learning (CALL) helps Saudi students' improve academic writing?
  - Is using a corpus-informed web interface that is supported by mobile phone applications capable of developing the lexical richness of Saudi English as a foreign language (EFL) university students' academic writing?
- The participants will be recruited from Saudi university students who study English in English language department with age range from 18-30, on both undergraduate and postgraduate levels.
- This study will take place in a university in Saudi Arabia.
- The data collected will be secured in password-protected file.
- The study aims to answer the research questions.

Brief description of research procedures (methods, tests etc):

- Permission will be obtained before data collection in one Saudi university.
- The method will be experimental study.
- The study will be comparing between two group of students. In the control group, the Computer-assisted language learning (CALL) method will be used and the uncontrolled group will be taught in conventional way, writing test will be conducted in both groups in the beginning and the end of experiment.
- An experimental group of 30+ Saudi participants at university level will be selected using stratified random sampling based on their initial language level attained through IELTS or TOEFL test scores (a minimum of 5.5 or 59 respectively).
- Data collection will be in pretest-posttest format in the form of expository essays written by participants in both experimental and controlled groups.
- The essays will be analysed in computer and will be stored in a password-protected computer.

- Computer-based logs will store participants' records in my personal laptop with protected password.
- Any information will be collecting in class will be kept confidential.
- Translating the information, if it is necessary.
- Deleting the data when I finish.
- No children will be involved in the study. Accordingly, no parent consent form will be required. Participants, however, shall sign a consent and non-coercion form that indicate that they are willingly participating in the study, and that they can stop their participation at any moment of time.

Section D: Ethical Issues Checklist

This section MUST be completed by the applicant if they marked YES to one or more questions in section B

Once you have completed this section please complete the rest of this form.

For sample forms, document templates and additional information relating to any of the supporting documents listed below please refer to faculty templates and guidance located at the ADH Ethics website

4.1 Principal data collection methods			
Please tick ✓ as applicable for all of the relevant methods and refer to notes highlighted in the right		**YES**	**NO**
Interviews			✓
Questionnaires			✓
Audio/video recordings			✓
Online surveys			✓
Observations			✓
Focus groups/workshops			✓
Documents/archives			✓
Other (please briefly specify)	Comparative test : essay writing	✓	

SUPPORTING DOCUMENT REQUIRED

*If you mark **YES** to any of the data collection methods within question 4.1 please provide copies of the **Participant Information Sheet** and **Participant Consent Form (using the templates available on the ADH Ethics website)** for assessment and submit with your application. Please note that questionnaires and question lists are not required for FREC/DRESC assessment but must be referred to their Tutor*

4.2 Anonymisation of data			
Please tick ✓ as applicable for the following question		**YES**	**NO**
Will you be anonymising the data collected from participants?		✓	
If you mark **YES** please briefly state how and why you will be anonymising that data. For examples see sample application form	All participants will be unidentified to ensure confidentiality and securing participants personal information, they will be identified as participant A, B, C.		

4.3 Working with children/ adults at risk		
Will you be observing, interacting or otherwise with the following participants?		
Please tick ✓ as applicable all of the following questions and refer to notes highlighted to the right	**YES**	**NO**
Children (under the age of 18)		✓
Adults without capacity to consent		✓
Those with learning disabilities		✓
Adults at risk		✓

SUPPORTING DOCUMENT REQUIRED

*If you mark **YES** within question 4.3 please provide copies of the copies of the **Parent/Guardian Consent Form (using the***

Other (please briefly specify)				***templates available on [ADH Ethics website]) for assessment and submit with your application***

4.4 Injury risk declaration			
Please tick ✓ as applicable for the following question and refer to notes highlighted to the right	**YES**	**NO**	**SUPPORTING DOCUMENT REQUIRED**
Will you be researching into activities that may involve a risk of personal injury to the participants?		✓	*If you mark **YES** to question 4.4 please provide a **DMU Risk Assessment Form** and submit with your application - Please liaise with your tutor and consult with your Faculty Health and Safety Officer for this form*

4.5 Human behaviour declaration		
Please tick ✓ as applicable for the following question	**YES**	**NO**
Will your research be supporting innovation that might impact on human behaviour? e.g. Behavioural Studies and/or Activities which may pose a physical risk to other people not directly participating in the research		✓
If **YES** please briefly specify. For examples see sample application form		

4.6 Environmental risk declaration			
Please tick ✓ as applicable for the following question and refer to notes highlighted to the right	**YES**	**NO**	**SUPPORTING DOCUMENT REQUIRED**
Will your research involve any activities which may pose a risk to the environment using a potentially hazardous substance?		✓	*If you mark **YES** to question 4.6 please provide a **DMU COSHH Form** and submit with your application - Please liaise with your tutor and consult with your Faculty Health and Safety Officer for this form*
If **YES** please briefly specify. For examples see sample application form			

4.7 Sensitive Research declaration		
Please tick ✓ as applicable for the following question	**YES**	**NO**

Will you be researching topics that are concerned with the following 'sensitive research' areas: illegal activities, including the collection of source data, e.g. access to web sites normally prohibited on university servers, or extremism and radicalisation, pornography etc.?		✓
If **YES** please briefly specify. For examples see sample application form		

Section E: How Ethical Issues Will Be Addressed

This section MUST be completed by the applicant if they marked YES to one or more questions in section B

Once you have completed this section please complete the rest of this form.

IMPORTANT NOTICE: *Please refer to the ADH Sample Application form for possible examples available on the ADH Ethics website*

5. Ethical Issues – Please state briefly all ethical issues identified, how they will be addressed and describe the methods that you will use

(Recommended: list bullet points)

- This study will involve human-being who will be informed with full details of the study and what I am going to do with the collected data, to address ethical issues.
    - I will provide the participant/organisations with full details of the study in non-specialist language, using the faculty approved Information Sheet (this will allow participant to make an informed decision whether to take part or not) and I confirm in writing if the participant: is willing to take part; agrees to their data to be used; acknowledges that they have read and understood the proposed study by completing a consent form.
    - The participants will be informed that participation is voluntary and granted the right and freedom to withdraw from the study.
    - The research will take place in a university in Saudi Arabia.
    - Any information will be collecting in class will be kept confidential.
    - I will minimise personal risks to themselves, No information will be given in dissertation that can be linked back to participants.
    - Translating the information into Arabic, when the participants do not understand.
- Collected data in the form of expository essays will be stored in a password protected computer in PDF file.

- This project raises the following ethical issues:
    - ·Collecting data from living human participants.
    - Storing data in electronic form about living human participants
    - Ensuring informed consent.
    - Informing participants of the right to withdraw at any time.

(These two issues are more challenging with this sample group, who are not native English speakers).

- MITIGATION OF ETHICAL ISSUES:
    - The data collected will not allow the identification of any named individual; personal data collected will consist of 30+ female Saudi university students specifically at Qassim University who study English in Preparatory Year Program (PYP) with age range from 18-30 on undergraduate level. If an individual participant's contribution to the project is discussed, the participant will be referred to either by code number or pseudonym.
    - All data collected, both essay texts and participant information, will be held securely in a password-protected computer with access restricted to the researcher and their Supervisor. A backup copy of the data will be held on a password protected USB drive with similarly restricted access.
    - The data held will be destroyed on completion of the project (date of completion = award of final mark for dissertation by the appropriate (Re)Assessment Board). Data storage and management will be GDPR-compliant.
    - Informed consent and knowledge of the right of withdrawal will be ensured through the use of the PCF and PIS (copies attached), translated into Arabic.

Section F: Ethical References and Additional Factors

This section MUST be completed by the applicant if they marked YES to one or more questions in section B

Once you have completed this section please complete the rest of this form.

6. To which ethical codes of conduct have you referred?		
Please tick ✓ as applicable all of the following questions	**YES**	**NO**
a) I confirm that all information collected will be processed by use in accordance GDPR 2018	✓	
b) I confirm that I will follow DMU's ethical codes of conduct for Good Research Practice	✓	

COMPULSORY

This section MUST be completed as a COMPULSORY REQUIREMENT

By government law all data must be handled in accordance with GDPR and

c) Are there any other ethical codes not listed above that you will be referring to? If **YES** please specify and include any links below:		✓	**all researchers must comply to DMU's guidelines for Good Research Practice**
Name:	Web address:		

7. Additional factors		
Please tick ✓ as applicable for the following question	**YES**	**NO**
Are there other additional factors that could/will give rise to ethical concerns e.g. communication difficulties?	✓	
If **YES** please specify. For examples see sample application form	• Because participants are not native English speakers, consent forms will be bilingual; Arabic and English, in order to allow informed decisions on the part of the selection cohort weather or not to participate in the study. Both Arabic and English texts will have the exact same meaning.	

Section G: Questions for Ethical Approval of Sensitive Research

This section MUST be completed by the applicant if they marked YES to one or more questions in section B Once you have completed this section please complete the rest of this form. Further guidance can be located at: http://www.dmu.ac.uk/research/ethics-and-governance/sensitive-research.aspx

ALL RESEARCH WHICH ANSWERS YES TO ONE OR MORE QUESTIONS IN SECTION G IS CLASSED AS HIGH RISK AND MUST BE REFERRED TO ADHethics@dmu.ac.uk FOR CONSIDERATION BY THE FACULTY HEAD OF ETHICS ONCE FULLY COMPLETED AND AUTHORISED BY THEIR TUTOR

8. Sensitive Research		
Please tick ✓ as applicable all of the following questions	**YES**	**NO**

1. Does the intended research include research into illegal activities? (This may include, but is not limited to, research into hate crime, theft, fraud, or harmful and illegal cultural practices, etc.). ***Please note: the university does not permit any crime to be committed for research purposes, such as accessing images of paedophilia or child abuse, unless special permission has been granted by the Home Office.***		✓
2. Does the research involve deception? (if yes, please give brief details as to why/how in the space below)		✓
3. Will the research require the use of sites usually prohibited on university computers (e.g. pornography or the sites of these prohibited organisations)?		✓
4. Has the research been commissioned under a commercial contract requiring secure storage for related materials?		✓
5. Does the intended research fit into any of the following categories? If so, please indicate which in the points below:		
a) Terrorism, extremism, terrorist or extremist organisations or groups, extremist ideologies, radicalisation, de-radicalisation		✓
b) Commissioned by the military or GCHQ:		✓
c) Commissioned under an EU/US security call or similar:		✓
d) Involve the acquisition of security clearances (including the Official Secrets Act):		✓

9. Accessing Websites for the Research Areas Outlined in Section 9, question 5 a - e		
Please tick ✓ as applicable the following question and refer to the note highlighted below	**YES**	**NO**
Will your research involve visits to websites that might be associated with radicalisation or terrorist/extremist organisations or groups?		✓
*If you answer **YES** to question 9 you are advised that such sites may be subject to surveillance by the police and accessing those sites might lead to police enquiries. It is strongly recommended that you use your university network address, once you have received ethical approval, which will ensure these activities are flagged as a legitimate part of your research. Whilst acquiring ethical approval for this project and adhering to University guidance on accessing websites and storing related materials securely will allow the University to verify the legitimacy of you accessing these websites, it cannot guarantee legal protection.*		
If you answered YES please acknowledge that you understand this risk by marking the 'I Agree' box with a tick (✓)	**I Agree**	

10. Storage and Transmission of Research Materials		
The secure storage of data and research material is strongly recommended to all who answered **YES** to section 8 question 5 (although all researchers may make use of the Information Media Technology Services (ITMS) provisions detailed in this form). Please note that anyone storing participants' personal data is subject to separate legislation and requirements. Details are outlined here, and in the university's Research Records Retention Policy.		
Please tick ✓ as applicable for the following questions and refer to notes highlighted below	**YES**	**NO**
Does your research involve the downloading and storage on a computer of any materials relating to extremism or radicalisation (for example, records, statements or other documents)?		✓
*If you answered **YES** to question 10, you should request a secure file share from ITMS to be created for your*		

project, with access restricted to you, or if absolutely necessary, any internal co-investigator(s). The research materials should not be kept on a personal computer, and all online research in this area should be done on university servers. Physical data should be scanned and uploaded to the password-protected server; where this is not possible, it should be kept in a locked filing cabinet or similar on university premises.

You will need to agree to store all materials relevant to question 9 and question 11, as well as any other materials related to your research project in accordance with this advice in order to gain ethical approval.

If you answered YES please confirm you will store *all* research documents in accordance with this advice by marking the 'I Agree' box with a tick (✓)	**I Agree**	

11. Storage and Transmission of Research Materials		
Please tick ✓ as applicable for the following question and refer to the note highlighted below	**YES**	**NO**
Might your research involve the electronic transmission of such materials to project Co-Investigators?		✓

NOTE: *The Terrorism Act (2006) and the Counter-Terrorism and Security Act (2015) outlaw the dissemination of terrorist publications if the individual concerned has the intention to encourage or induce others. Publications disseminated for the purposes of an approved and clearly defined research project should not amount to an offence, because the requisite intention is unlikely to be present. However, you are advised to exercise caution and avoid dissemination of raw research materials where possible.*

If you answered YES you will need to agree to only transmit these materials to Co-Investigators after they have been password-protected and that you will only use 'Zend', which encrypts materials in transmission by marking the 'I Agree' box with a tick (✓)	**I Agree**	

DEFINITIONS

Illegal activities incorporates **any illegal activity;** for example, trespassing, theft, or online piracy

Hate Crimes are those committed against someone because of their disability, gender-identity, race, religion or belief, or sexual orientation.

Harmful and illegal cultural practices: these include violence against women and girls, Female Genital Mutilation (FGM), forced marriage, child sexual exploitation and honour-based violence.

Accessing prohibited websites: You will need to seek permission from ITMS; advice on how to gain permission is available from the ITMS helpdesk.

Radicalisation refers to the process by which a person comes to support terrorism and forms of extremism leading to terrorism

De-radicalisation usually refers to activity aimed at a person who supports terrorism and in some cases has engaged in terrorist related activity, which is intended to effect cognitive and/or behavioural change leading to a new outlook on terrorism and/or disengagement from it.

Secure File Share: You will need to ask ITMS to create a Secure File Share for your project, with access restricted to yourself, or if absolutely necessary, any internal co-investigator(s). Advice is available from the ITMS helpdesk.

Zend: advice on using Zend is available from the ITMS helpdesk.

Section H: Authorisation and Approval

BEFORE COMPLETING THIS SECTION PLEASE REFER TO THE NOTE BELOW:

- **Applications must undergo formal assessment BEFORE undertaking any data collection directly associated with the proposed research activity**
- Applicants must submit their fully completed application and supporting documents **from an official DMU e-mail account** to their Tutor for checking, authorisation and risk assessment in the first instance

- Please consider naming and numbering documents appropriately to assist reviewers
- Accepted file formats: word.doc / word.docx – only electronic forms must be completed/submitted
- Signing **Section H (12 – 13)**, confirms that the applicant and Tutor has read, understood and will/assist the applicant to comply with the ethical procedures stated in this application
- If you are requested to resubmit please use the same completed form and clearly track/highlight all changes

ADH Ethics Overview Guide, sample application forms and supporting document templates and submission dates can be located the ADH Ethics website

12. Applicant – Checklist and Authorisation		
Please check your application and tick ✓ as applicable to the following questions	**YES**	**NO**
a) I declare that I have completed all fields, understand and will comply with the ethical procedures declared in **Section A – H** of this application form	✓	
b) I confirm that I have consulted with the Sample ADH Ethics Application when completing this form - available on the ADH Ethics website	✓	
c) I confirm that I have referred this ethics application to my Tutor	✓	
d) I confirm that I have read the Responsibilities of the Researcher guidelines and I will comply with them	✓	
e) I confirm that I have completed **Section G Questions for Ethical Approval of Sensitive Research (COMPULSORY)**	✓	
f) I declare that I have considered the ethical implications of the research proposed in this application and understand that I must not undertake any research activity until this form is fully approved	✓	
g) If the circumstances of my study changes I agree to re-apply for ethical approval before commencing with my research	✓	
h) I confirm that I have submitted for assessment the following required supporting documents (listed below) with this application form. ***Please refer to section D of this form to ensure the correct documents are submitted***		

Participant Information Sheet	✓	Consent Form	✓
DMU Health and Safety Assessment Form		DMU COSHH Risk Assessment Form	

Applicant Name:	HAIFA ALRESHEEDI	**Date:**	DD/MM/YYYY 09/05/2019

13. Tutor – Authorisation

BEFORE COMPLETING THIS SECTION PLEASE REFER TO THE NOTE BELOW:

- **Tutors** MUST confirm that they fully authorise the content of the application and supporting documents by completing this section in full. Forms must be checked and risk assessed in the first instance by the Tutor
- By completing this section the tutor confirms that they have read, understood and will support the applicant to comply with the above ethical procedures stated in this application
- Accepted file formats: word.doc / word.docx – only electronic forms must be submitted
- Sample application forms are available to assist you with your assessment

Please tick ✓ as applicable

a) Risk Assessment: I declare the research proposed in this application to be:

If LOW RISK* please tick (✓)		**If MEDIUM RISK** please tick (✓)**	✓	**If HIGH RISK*** please tick (✓)**	

b) I confirm that I have read and agreed the content of this form and fully support the research proposed in this application	✓
c) I declare that the applicant named above has completed their application in collaboration with myself as the applicant's tutor and will be working under my supervision	✓
d) I confirm that the applicant has completed all fields in **Section A – H** of this application form	✓
e) I confirm that I have assessed and agreed the content of all supporting documents required as part of this submission (as indicated in **Section D** of this form)	✓

Name:	Jie Liu	**Date authorised:**	DD/MM/YYYY 10/05/2019
Title/Role:	Supervisor	**Date re-authorised:** **Department/Module:**	TEFL5006

Low Risk*	**Medium Risk****	**High Risk*****
Anonymous questionnaires market or opinion research, customer satisfaction surveys, previously collected anonymous data held by the university which cannot be traced back to the individuals who provided them, *observations of performances/ behaviour, service level assessments. (Provided that these do not touch on sensitive topics).* ***Low risk tutor authorised forms are granted full approval and must be submitted by the***	*Face-to-face focus groups, workshops and interviews, studies where anonymity cannot be maintained, collection of and/or research using human tissue/fluids, studies which involve participants under 18 or adults at risk, studies that induce anxiety, stress or other harmful psychological states* ***Medium risk Tutor authorised forms MUST undergo assessment by the relevant committee. Applicants must not conduct research of this type without written approval from the relevant committee. Applications must be submitted by the tutor (copying in the applicant) to one of the following relevant e-mail addresses: School of***	*Research topics concerned with the following 'sensitive research' areas: illegal activities, including the collection of source data, e.g. ethics statistics, or access to web sites normally prohibited on university servers, or extremism and radicalisation. Studies which will need to be reported to University Research Ethics Committee (UREC).* ***High risk tutor authorised forms MUST undergo assessment by the Faculty Head of Research Ethics. Applications must be submitted by the tutor (copying in the applicant) to ADHethics@dmu.ac.uk*** ***Applicants must not conduct***

tutor (copying in the applicant) to ADHethics@dmu.ac.uk to be logged and filed	***Design applications DRESC@dmu.ac.uk ; Other School applications ADHethics@dmu.ac.uk***	***research of this type without written approval from the Faculty Head Research Ethics***

14. Medium Risk Reviewer Outcome – (Assessor Use Only)				
Outcome (tick ✓ as applicable)				
Approved		**Rejected**	**x**	**DD/MM/YYYY** 20/5/19
Comments/feedback (First Submission):				
All ethical issues successfully considered and addressed **Section C Project Proposal – expand detail of project: e.g. what do you mean by 'difficulties'? What do you mean by 'academic English'?** **Section C Purpose/Aims of Project – expand abbreviations for clarity: e.g. what do CALL and EFL stand for?** **Section D Ethical Issues – state the ethical issues you are addressing in the bullet points. At present you are simply stating your intentions in collecting date. Also, as above, set out your abbreviations in full on first mention. You must always do this in your participant information and consent forms.** **Section E – more detail here is needed: e.g. what do you mean by 'minimising personal risks' and what form of 'password protected' devise/s will be used for storage.**				
Comments/feedback (Second Submission):				
Approved		**Rejected**	**X**	**DD/MM/YYYY** 07/06/19

Resubmission notes: I have no issue with the unglossed use of terms such as CALL and EFL; these are not arcane vocabulary, and the issues concerning the nature of the 'difficulties' ESL/EAL students face are, I feel, adequately elucidated in the Purpose/Aims section, where the applicant shows that they are investigating the ways in which CALL may aid in the development of the lexico-grammatical development of student writing.

1. APPLICATION FORM

Section C is acceptable.

Section 5: There needs to be a clear division between IDENTIFYING Ethical issues and methods of MITIGATING them. This is, however, a very low-risk project; no identifiable data (as far as can be seen) is being collected, and the student is ensuring Informed Consent and RIght of Withdrawal through PCF and PIS.

However, I recommend that Section 5 is revised as follows, adopting the following structure:

---

1. ETHICAL ISSUES:

This project raises the following ethical issues:

- collecting data from living human participants
- storing data in electronic form about living human participants
- ensuring informed consent
- informing participants of the right to withdraw at any time.

(these two issues are more challenging with this sample group, who are not native English speakers).

2. MITIGATION OF ETHICAL ISSUES:

The data collected will not allow the identification of any named individual; personal data collected will consist of **[STATE WHAT PERSONAL DATA IS COLLECTED: AGE/SEX/LEVEL OF EDUCATION? PLEASE BE AS SPECIFIC AS POSSIBLE].** If an individual participant's contribution to the project is discussed, the participant will be referred to either by code number or pseudonym.

All data collected, both essay texts and participant information, will be held securely in a password-protected computer with access restricted to the researcher and their Supervisor. A backup copy of the data will be held on a password protected USB drive with similarly restricted access.

The data held will be destroyed on completion of the project (date of completion = award of final mark for dissertation by the appropriate (Re)Assessment Board). Data storage and management will be GDPR-compliant.

Informed consent and knowledge of the right of withdrawal will be ensured through the use of the PCF and PIS (copies attached), translated into Arabic.

PARTICIPANT CONSENT FORM

Highlighted [**areas**] of this template must be adapted to suit the needs of your particular study. Edited versions of this template must be approved by the applicants Tutor/Supervisor in the first instance. You may wish to consider using several versions of the consent form if you are conducting different types of research.

This document should be dated and given a version number so that when amendments are made it is clear which is the correct and most recent version. Please also ensure that highlights in this document are removed after completion. One copy of the signed and dated consent form should be given to the participant and one copy retained by the researcher to be kept securely on file.
For resubmitted versions please ensure that you track all changes to clearly identify any amendments to the reviewer.

Title of Research Project:	Investigating the Efficacy of Flexible Language Acquisition Project (FLAX) in Developing Academic Writing: The Case of Saudi University Students.
Researcher details:	Haifa Alresheedi P2510819@my365.dmu.ac.uk
This agreement is made in regard to the **essay-writing exercises** which took place on **[date]**	
Please tick and initial all boxes if you have read and understood the following:	
1. I confirm that I have read and understood the Participant Information Sheet **[version 1]** for the study above. I have had the opportunity to consider the information, ask questions and these have been answered satisfactorily	
2. a) I agree to my data being anonymised and stored securely.	
3. I understand that my participation is voluntary. I also understand I am free to withdraw at any time - without giving any reason and without there being any negative consequences. I can decline to answer any particular question, or questions	
4. I agreed that **non-identifiable data** may be **written up as a dissertation/thesis.**	
5. The participants are not being interviewed.	
5. I understand that De Montfort University has reviewed and approved this study	
6. I understand that the data collected during the study has been inspected by a supervisor from De Montfort University. I give permission for the Supervisor to have access to my data	
7. I also acknowledge that if I am being interviewed this data may be transcribed by a third party, authorised by the university to undertake such duty.	
8. I agree to take part in the above research project	
9. I agree to be contacted by the researcher named above	

Print name of participant			
Participant contact details (e-mail)			
Participant signature		Date	

PARTICIPANT INFORMATION SHEET

Highlighted [**areas**] of this template must be adapted to suit the needs of your particular study. Edited versions of this template must be approved by your Tutor/Supervisor/Line Manager in the first instance. You may wish to consider using several versions of the Participant Information Sheet if you are conducting different types of research.

This document should be dated and given a version number so that when amendments are made it is clear which is the correct and most recent version. Please also ensure that footnotes in this document are referred to and removed after completion. A copy of this document should be given to and retained by the participant. For resubmitted versions please ensure that you track all changes to clearly identify any amendments to the reviewer.

Title of Research Project: Investigating the Efficacy of Flexible Language Acquisition Project (FLAX) in Developing Academic Writing: The Case of Saudi University Students. [1]

Researcher details: Haifa Alresheedi / p2510819@my365.dmu.ac.uk [2]

The researcher named above would like to invite you/ to take part in a research study. Before you decide whether to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully to decide whether you wish to take part or not. If you wish to, please discuss this with friends and relatives. If there is anything that is not clear or if you would like more information, please ask the researcher named above.

What is the purpose of this study? [3]

- This project aims to explore the difficulties Saudi Arabian university students experience in the use of certain English words and phrases (for example, 'in terms of') in academic writing.

The research for this study is being undertaken by the researcher named above who is a Master's degree student in Faculty of Arts, Design and Humanities at De Montfort University, Leicester.

What does the study involve? [4]

If you agree to participate in this study, we will ask you to take part in a short academic writing course, and write an essay before and after the intended intervention, The study will take no longer than six weeks and will take place in a university in Saudi Arabia.

Why have I been chosen? [5]

You have been chosen because you are a Saudi national at the university level.

Up to thirty other participants will also be chosen to take part in this study.

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[1] Is the title self-explanatory to a lay person? If not, a simplified title should be used, (acronymic titles can only be used if they are accompanied by the full title)

[2] Do not use your personal contact details such as home/mobile phone number, or personal e-mail address

[3] The summary must clearly indicate to the participant the background of the project and its aims and what the study is about. If the study is for an educational award i.e. BSc/BA, MSc/MA or MPhil/PhD or if you are an academic member of staff this must be stated

[4] You should describe exactly what taking part will involve for the researcher. For example, a one hour interview in their own home with questions focusing on a specific theme or responding to a questionnaire or attending a focus group. Any invasive procedures must be explained here where applicable and it is also essential to explain whether any normal treatment will be withheld for all or part of the study. Set down clearly what you expect the potential participant to do and explain exactly what will happen to them during the research study. Please also state appropriate realistic length of time.

[5] You should explain here how the participant was chosen to be invited to take part in the study and how many other research participants will be studied

Do I have to take part? [6]

Participation in this study is voluntary and you may ask the researcher questions before agreeing to participate. It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a Consent Form before the study takes place. If you decide to take part you are still free to withdraw at any time and without giving a reason.

I am interested in taking part, what do I do next?

If you are interested in taking part please contact the researcher named above by the e-mail provided.

What if I agree to take part and then change my mind? [7]

You can withdraw from the study at any time, without giving a reason. If you wish to withdraw from this study please contact the researcher named above.

Any data collated up to the point of withdrawal will be kept securely on a password protected database and securely disposed of following the withdrawal request.

What are the possible disadvantages and risks of taking part? [8]

While we hope that your experience will be pleasant, you will be required to do multiple tasks both in and outside class, which may make you feel uncomfortable. If at any point during the study you feel distressed you can choose to remove yourself and the session will end.

What are the possible benefits of taking part? [9]

The benefits of taking part in this study will enhance your academic writing level to a significant extent, will expose you to interaction with cutting-edge technology in language education, and will allow you a chance to participate in developing second language teaching research.

What if something goes wrong?

If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone's negligence, then you may have grounds for a legal action but you may incur costs. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, the normal University complaints mechanisms should be available to you.

What should I do if I have any concerns or complaints? [10]

If you have any concerns or complaints you can initially speak to the researcher, who will acknowledge your concerns within ten working days. If no satisfactory outcome is achieved or you wish to make a formal complaint, please contact

Dr. Jie Liu in the Faculty of Arts, Design & Humanities, De Montfort University, Leicester at the following address:

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[6] A Participant Consent Form or Parent/Guardian Consent Form is required if you (the applicant) indicates in the ADH Ethics Application Form Issue Checklist that this supporting document template is required. Please refer to the ADH Ethics Application Form to ensure that the correct document is used and submit the relevant consent form as part of the ethics form.

[7] Participants must be advised that they can choose to withdraw from the study at any time, without being giving a reason. It is important to state what will happen to any data collected up to the point of withdrawal. If the data is collected anonymously it may not be possible to identify and withdraw. For other data you should state how long a participant has to make a request to withdraw data. It is acceptable to inform the participant that data cannot be withdrawn providing they consent on that understanding.

[8] One of the disadvantages you should identify is the participant giving up of their time. If interview/focus groups questions have the potential to cause upset or raise emotive issues you must be clear about what you will do. You should make it clear that the interview will cease so they can gather themselves if they wish.

[9] These might include direct benefit to participants, or may not benefit participants personally but will provide information which will inform debate or can be used to seek funding for more research.

[10] If the researcher is an academic member of staff this should be their Line Manager. If the researcher is a student this should be their tutor/supervisor. Only DMU addresses should be included.

The school of Humanities, De Montfort University, Leicester, LE1 9BH

Email address: jie.liu@dmu.ac.uk

Will taking part in this study be kept confidential? [11]

All the information that we collect about you during the course of the research will be necessary to the study and will be kept for five years after the study has been completed. All collated data during the course of the research will be stored on a password protected database and will be kept strictly confidential.

Data will be managed by the researcher named above for the duration of the project. Only the researcher and Supervisor will have access to the data. The Faculty Head of Research Ethics may also require access to check that the study has been conducted in accordance with the approval.

The Participant will be given an ID code which will be used instead of your name, unless this is contrary to your wishes. Any identifiable information you may give will be removed and anonymised. Any published data released to a third party will be anonymised so that it cannot be traced back to the Participant.

You should also be aware that the researcher may be duty bound to pass on information that you provide that reveals harm has occurred to a child or other vulnerable individual.

What will happen to the results of the study? [12]

If you agree to participate in this study, the research will be written up and used in a dissertation and a digital copy of this project will be submitted on Turnitin.

Please note that data [submitted on Turinitin may be shared with third parties. This research may also be used by other researchers and regulatory authorities for future research.

If you require it, you may request a copy of the findings from the researcher named above by e-mail which will be submitted to you.

Who is funding the research? [13]

No funding body.

Who has reviewed this study? [14]

This study has been reviewed and approved by De Montfort University, Faculty of Arts, Design and Humanities Research Ethics Committee.

Contact for Further Information

Thank you for volunteering for taking part in the study. For any enquiries please contact the researcher at the e-mail address listed above.

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[11] Consider anonymising the participants by identifying the participant with an ID number, e.g. Participant A, B, C etc. Do not use their initials as this may identify the participant.
If you are conducting a focus group interview and/or recording a performance which will be available for public view you cannot promise confidentiality.
Duty cannot be imposed on all participants taking part in a focus group. If this is the type of study you are conducting you will need to state this in this section.
You should also consider the possibility that you may require consent from a parent/guardian and that a participant may reveal information that a child or other vulnerable person has been or is being harmed. There may be a legal, professional or moral requirement for you to reveal that information and this should be included in the information sheet.

[12] It is important to state here who else will have access to this information if it is submitted/deposited on Turnitin/DORA. If this is for an educational award and your dissertation/thesis will be submitted on Turnitin, data may be shared with third parties. If this is for an academic study your publication/journal may be deposited onto DORA which will means that it will be available to other internet users. Please specify which depending on the type of study. It is also good practice to indicate that the research may be used by other researchers and regulatory authorities for future research.

[13] This section is only required if the research project is being funded by an external funder or receiving internal funding.

[14] Please note that researchers must not conduct their research until they have been granted full ethical approval. Do not include names of any individuals who may have reviewed the study.

2- Permission letters.

بسم الله الرحمن الرحيم

Kingdom of Saudi Arabia
Ministry of Education
Qassim University
Deanship of Educational Services

المملكة العربية السعودية
وزارة التعليم
جامعة القصيم
عمادة الخدمات التعليمية
(٠٤٠)

Qassim University جامعة القصيم

الرقم :
التاريخ : ١٤٣٠ / ٩ / ٢٢ هـ
المرفقات :
الموضوع :

To: University of Demont Fort, UK

The Deanship of Educational Services (Preparatory Year Program) does not object to fulfill the wish of the student / Haifa Mubarak Al-Resheedi who is from Saudi Arabia and is studying as a student in University of Demont Fort, UK, in collecting data related to her research from the students of the summer semester in the Deanship of Educational Services (Preparatory Year Program), Qassim University. This letter was given to her upon her request.

Dean of Deanship of Educational Services

Dr. Saleh S. Alhewairini

Qassim University جامعة القصيم
عمادة الخدمات التعليمية
Deanship of Educational Service

Kingdom of Saudia Arabia
Ministry of Education
Qassim University
Deanship of Educational Services

المملكة العربية السعودية
وزارة التعليم
جامعة القصيم
عمادة الخدمات التعليمية
(٠٤٠)

الرقم: ٢٩٨ التاريخ: / / ١٤٤٤هـ

المرفقات: الموضوع:

To: University of Demont Fort UK
Dated: 08/08/2019

Subject: Confirmation Regarding Correction of Exams related to Research Project of Haifa Mubarak Al-Rasheedi

It is confirmed that two English language teachers in the English language Unit of the Deanship of Educational Services, Qassim University named:

1) Mr. Haroon Ayaz, 2) Mr. Shehzad Ahmed have corrected the writing tests with regard to Haifa Mubarak Al-Rasheedi's research project at the University of Demont Fort UK.

Dean of Educational Services

Dr. Saleh S. Alhewairini

The University is accredited BY EEC-HES
(Education Evaluation Commission - Hiegher Education Sector)
May 1. 2013 - April 30.2020

الجامعة معتمدة أكاديمياً من
هيئة تقويم التعليم - قطاع التعليم العالي
١ - مايو ٢٠١٣ - ٣٠ - أبريل ٢٠٢٠

Direct:(016)3801862 - Fax : (016)3801728 - P.O.Box : 6595 - Code : 51452

مباشر: ٣٨٠١٨٦٢(٠١٦) - ص.ب: ٦٥٩٥ - الرمز البريدي: ٥١٤٥٢ - فاكس: ٣٨٠١٧٢٨(٠١٦)

Kingdom of Saudia Arabia
Ministry of Education
Qassim University
Deanship of Educational Services

المملكة العربية السعودية
وزارة التعليم
جامعة القصيم
عمادة الخدمات التعليمية
(٠٤٠)

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Direct:(016)3801862 - Fax : (016)3801728 - P.O.Box : 6595 - Code : 51452

مباشر: ٣٨٠١٨٦٢(٠١٦) - ص.ب: ٦٥٩٥ - الرمز البريدي: ٥١٤٥٢ - فاكس: ٣٨٠١٧٢٨(٠١٦)

13 June 2019

P2510819

Haifa Alresheedi
Navigation Street
Fifth Floor, Apartment 20
Leicester
LEI 3UJ

Dear Sir/Madam,

Re: Haifa Alresheedi (date of birth: 22/12/91)
MA English Language Teaching (X14272)

I'm writing to grant permission for Haifa Alresheedi to collect data for her dissertation from Al Qassim University in Saudi Arabia. She will be undertaking voluntary teaching of English Language classes there from Tuesday 18th June to Thursday 8th August, and will be doing questionnaires and interviews with staff and students at the University.

Please do not hesitate to contact her supervisor, Susan Barwick (email:susan.barwick@dmu.ac.uk) if you have any queries.

Thank you.

Yours sincerely,

Lynda McLaughlin
Postgraduate Coordinator
Faculty of Arts, Design and Humanities

4- **Lesson plans:**
https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A76ce2473-eb5b-48a7-bbe8-f928ec4841f0

5- **Class materials:**
https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A1dea067f-3d0c-4757-9bc2-749b9c50195c

https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A6ac82161-a767-4b8d-bb4d-c93a851473d6

6- **Rubric:**

https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Ad6697780-c1e6-4cf2-995c-6cf62caf18ed

7- **Pretest and posttest for intervention group:**

https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A411819f2-702a-4020-a9b7-212616dc0907

8- **Control group:**

https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A1ee76992-71e2-417d-9d1f-1aff5cb4465f

9- **Statstic for the intenention group:**
https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Ad20cec1d-c5f9-4384-807c-84f79a5e5640

10- **Statstic for the control group:**

https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Aa8856388-ad50-497b-a30b-9506cbd517dc

11- **Output:**

https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Aabe70f6d-cecc-40cd-b8e9-8d169a2be099