

## LANGUAGE EFFECTIVENESS AND FACTORS INFLUENCING SCIENTIFIC WRITING OF INDONESIAN UNDERGRADUATE THESIS

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APA Citation: Dakhi, S., & Hutabarat, H. (2018). Language effectiveness and factors influencing scientific writing of Indonesian undergraduate thesis. *English Review: Journal of English Education*, 7(1), 61-74. doi: 10.25134/erjee.v7i1.1496.

Received: 17-08-2018

Accepted: 23-10-2018

Published: 01-12-2018

**Abstract:** The linguistic feature distinction between written and spoken discourse, like scientific writing, narrative text, discussion text, oral speech, etc. has been a longstanding discussion among scholars. However, there is limited number of studies on Indonesian undergraduate thesis context. This article reports the language effectiveness, i.e. lexical density and grammatical complexity of undergraduate thesis using the Flesch's Analysis of the Readability of Adult Reading Materials (1974) and the determinant factors influencing them. This descriptive study, applying online system application, was conducted in an Indonesian pseudonym university. Forty-two undergraduate theses were used as data source of lexical density and grammatical complexity, and four English lecturers participated on interview. Results showed that the average lexical density ratio was 42.14 and the grammatical complexity was 14.54. On the other hand, the determinant factors of academic writing holistically encompass; (1) psychological factors including identity awareness, motivation, and conceptual competency, (2) sociocultural factor covering personal experience, and (3) linguistic factors, namely linguistic awareness and application, and mechanical competency. To sum up, three important conclusions are drawn. Firstly, there is no exactly the same lexical density and grammatical complexity across chapters of the undergraduate theses. Secondly, the undergraduate theses are lexically acceptable, but grammatically are not as they are interpreted as American students' slick fiction product. Finally, variables affecting academic writing are not only linguistic factors, but also psychological and sociocultural ones.

**Keywords:** *lexical density; grammatical complexity; undergraduate thesis; Indonesian context; academic writing; language effectiveness.*

### INTRODUCTION

Language effectiveness has been a longstanding study among scholars as it is believed that written and spoken discourse, caused by the characteristics and dynamics of living language (Dakhi, 2011), are two different linguistic entities (Halliday, 1989; Zhang, 2013; Ghasemi & Jahromi, 2014; & Thanh, 2015). Functionality discrepancies and linguistic features (Ghasemi & Jahromi, 2014) define their similarity.

The undergraduate thesis, a writing product in which language effectiveness necessitates as it has its own typical features (Pan, 2016), is simply defined as a communicative, efficient, and effective occurrence since textuality standards and grammatical complexity/intricacy, lexical density, nominalization, explicitness, contextualization, spontaneity, and repetition-hesitation and redundancy are met. Additionally, it generally contains a

generic structure, i.e. introduction (Pardede, 2012), literature review (Levy & Ellis, 2006), methodology, research finding, discussion, conclusion, and suggestion. Moreover, it requires a complexly-integrated skill (Deane, *et al.*, 2008) as it is a metacognitive process drawing an individual's knowledge, basic skill, strategies, and ability to coordinate multiple processes (Huy, 2015) and expressive, receptive, and reflective capabilities.

A number of empirical studies testify the urgent need of the language effectiveness of undergraduate thesis, a new defined linguists' focus. It, for instance, is evidenced by Stegan (2003) investigating the lexical density in oral and versus written Rangi texts, Seyabi and Tuzlukova (2014) reporting the post-basic school and university students' lexical items and content, Chokwe (2013) researching academic writing skills, and Huy (2015) confirming the student's writing problems, i.e. lexical item and grammar. More specifically, Signes and Arroita (2015), Marques (2008), and Biber, Gray, and Stamples (2016) studied lexical density and investigated grammatical complexity.

In Indonesia, studies on lexical density and grammatical complexity have been only reported by Nesia and Ginting (2018) and Adawiyah (2015). However, Nesia and Ginting (2018) focused their study on the lexical density in English reading texts for Indonesian senior high school, and Adawiyah (2015) differentiated the lexical density in scientific and narrative texts. A study exploring the thesis quality in accordance with written discourse characteristics, therefore, has to be taken into account. The present study is to provide such need. It was designed to objectively describe the lexical density (Halliday, 1985; Flesch, 1974), grammatical complexity (Halliday, 1985; Flesch, 1974) and factors influencing scientific writing (Muchemwa, 2015) of English undergraduate theses of an Indonesian pseudonym private university.

## **METHOD**

To answer objectively the research questions, 42 undergraduate theses of a pseudonym private university in Indonesia were used as the data source of lexical density and grammatical complexity. The reason for selecting these 42 theses, consisting of 2015 and 2016's undergraduate theses, is because those are the only soft-copies of project reports available. In addition, 4 informants participated on an interview, a technique to collect the data regarding the factors affecting undergraduate thesis. The selected four informants were all full-time English lecturers with different time teaching experiences. Their experience teaching English as well as supervising the undergraduate theses were other reasons for the selection of the respondents.

The full texts of undergraduate thesis containing five chapters, namely introduction, literature review, research methodology, research finding and discussion, and conclusion and suggestions, were entirely analyzed using online system application at <http://textalyser.net/index.php?lang=en#analysis> (for lexical density) offered by the Bernhard Huber Internet Engineering Company and <http://www.readabilityformulas.com/freetests/six-readability-formulas.php> (for grammatical complexity). The introduction section is the Chapter I (henceforth C1), the literature review is the Chapter II (henceforth C2), the research methodology is the Chapter III (henceforth C3), the research finding and discussion is the Chapter IV (henceforth C4), and the conclusion and suggestion is the Chapter V (henceforth C5). Scores taken and descriptively analyzed were Mean Length of Sentence (henceforth MLS) for grammatical complexity and Flesch's Reading Ease Score for grammatical one.

Furthermore, both lexical density and grammatical complexity scores were tabulated according to what year, 2015 and 2016, the English undergraduate theses completed. At last, they were interpreted

using Flesch's (1974) Analysis of the Readability of Adult Reading Materials and related theories.

Table 1. *Flesch's analysis of the readability of adult reading materials*

Style	Flesch Reading Ease Score	Average Sentence Length in Words	Average No. of Syllable per 100 Words	Type of Magazine	Estimate School Grade Completed	Estimate Percent of U.S. adults
Very Easy	90 to 100	8 or less	123 or less	Comics	4 <sup>th</sup> grade	93
Easy	80 to 90	11	131	Pulp fiction	5 <sup>th</sup> grade	91
Fairly Easy	70 to 80	14	139	Slick fiction	6 <sup>th</sup> grade 7 <sup>th</sup> or 8 <sup>th</sup> grade	88
Standard	60 to 70	17	147	Digests	Some high school	83
Fairly Difficult	50 to 60	21	155	Quality	High school	54
Difficult	30 to 50	25	167	Academic	High school or some college	33
Very Difficult	0 to 30	29 or more	197 or more	Scientific	College	4.5

An in-depth interview data was analyzed using thematic technique, a process to analyze the classifications and present themes (Alhojailan, 2012) of obtained qualitative data. Three steps were conducted, namely data reduction, data display, and verification/conclusion drawing.

To establish the trustworthiness of the research finding, some techniques were employed. For the lexical density and grammatical complexity, repeated measures on the manuscripts, three times, were conducted to assure dependability of the data. On the other hand, for interview data verification by repeating a similar question to the participants during the interview was conducted. At last, a peer scrutiny of project and member check by the peer review members who were officially assigned has been applied to meet the credibility of the finding.

## RESULTS AND DISCUSSION

### Lexical density

Table 2. *Lexical density of 2015's thesis*

	C1	C2	C3	C4	C5
Max	57.20	60.00	61.50	46.70	68.20
Min	44.20	33.50	32.40	21.90	40.50
Mean	51.32	43.73	39.48	26.33	53.53

As shown in Table 2, the C1 mean lexical density of 2015's thesis is 51.32. This is 7.59 higher than C2's, 43.73 (*difficult*), 11.48 higher than C3's, 39.48 (*difficult*), and 24.99 higher than C4's, 26.33 (*very difficult*). Regardless of that, C5's mean lexical density is the highest one. It is 53.53 (*fairly difficult*) or 2.21 higher than C1's.

Referring to the Flesch's table, specifically to what grade they are interpreted in American student's writing, those 5 units can be categorized into three different groups. The first and fifth chapters are American high school category, meant written by American high school students. The second and third chapters, respectively literature review and research methodology, are estimated as American high school or some college learners' product. Furthermore, the research finding and discussion section is grouped into their college students' writing. This is to say that the literature review, research methodology, and research findings and discussion sections according to genre of Flesch's table are lexically accepted as academic and scientific discourse.

Table 3. *Lexical density of 2016's thesis*

	C1	C2	C3	C4	C5
Max	59.90	61.20	53.10	53.70	64.60
Min	21.30	33.30	30.30	12.20	23.40
Mean	48.03	43.75	39.55	22.70	53.01

Though the 2015's and 2016's lexical density are academically acceptable, they show a slight difference. The 2015's lexical density is 42.88, or 1.47 higher than 2016's (41.14). Moreover, the introduction, literature review, and conclusion and suggestion sections of the 2016's got improved. Hence, this indicates that the 2016's undergraduate theses lexical density got better.

The previous description has made two crucial implications of the findings. They are dealt with the highest and lowest lexical density, and the diversity of lexical density across the writers and undergraduate thesis chapters. It can be stated that both the 2015's and 2016's literature review sections possess the lowest lexical density, the best, and their introduction sections, a piece of discourse which introduces a lengthy discourse, a project report, a laboratory report or even student essay (Stapa, Maasum, & Aziz, 2014), own the highest ones, the worst.

Thus, this implies twofold. Firstly, regardless of the systematic procedure of literature review (Supriya *et al.*, 2018), theories and previous studies, sources of literature review, primarily predict Indonesian EFL undergraduate's lexical density. It was caused by the fact that the literature synthesis helps the writers develop a knowledge base (Apostolou, Dorminey, Hassell, & Rebele, 2018) in writing the undergraduate thesis. Secondly, the position of the introduction section at the beginning of the scientific report, presumably reviewed more frequently and intensively, does not affect lexical density.

Finally, the diversity of lexical density indices across the writers and undergraduate thesis chapters obviously approves the dynamics of any living languages (Dakhi, 2016). It means that words have widely varying frequencies of use. Thus, it is natural to have different lexical density across the writers and undergraduate thesis chapters. A similar finding strengthens the nature of that lexical density. Reported by Demir-Vegter, Aarts, and Kurvers (2013), it was claimed that there was also a lexical diversity in

maternal input to Turkish preschoolers in the Netherlands.

More importantly, a report by Nesia and Ginting (2018) on lexical density of English reading texts for Indonesian senior high school showed a difference with the present report. They reported that the lexical density of explanative texts were 58.42% and 52.05%; review texts were 55.73% and 53.51%; narrative texts were 48.96% and 43.97%; and discussion texts were 47.79% and 42.57%.

Discussing the different realization of the lexical density among the data sources is interesting. It is assumed that the difference is mainly caused by genres of the data source. Naturally, academic genre is lexically denser. The data source of the present report was the undergraduate theses, academic genre, while their sources were the English reading texts for senior high school in Indonesia.

An additional report confirming the lexical density of the academic text is Adawiyah (2015). Her/his study was to differentiate lexical density between scientific and narrative texts. It was discovered that the lexical density of scientific texts (49.4% and 50.2%) were higher than the narrative ones (41.0% and 40.8%).

**Grammatical complexity**

Table 4. *Grammatical complexity of 2015's thesis*

	C1	C2	C3	C4	C5
Max	18.72	20.32	16.88	16.45	17.05
Min	13.25	11.51	9.47	8.00	10.21
Mean	15.93	15.58	12.89	11.75	14.64

As shown in Table 4 that the mean MLS index of the C1 of the 2015's thesis is 15.93 (*fairly easy*), received the most grammatical complexity. Respectively, C2, C5, C3, and C4 are 15.58 (*fairly easy*), 14.64 (*fairly easy*), 12.89 (*easy*), and 11.75 (*fairly easy*), the least grammatical complexity. The data implies that, firstly, grammatical complexity of the chapter of the 2015's English undergraduate theses is *standard, fairly difficult, difficult, and very difficult* category.

Secondly, the MLSes of C1, C2, and C5 are categorized as *fairly easy*, and the MLSes of C3 and C4 are *easy*. Consulting the Flesch's table, therefore, the introduction, literature review, and conclusion and suggestion sections of the 2015's equal to the 6th-8th American graders' writing.

On the other hand, the MLSes of the 2016's English undergraduate theses are displayed in Table 5. It shows that the MLSes of C1, C5, C2, C4, and C3 are respectively 16.86 (*fairly easy*), 16.45 (*fairly easy*), 16.06 (*fairly easy*), 12.64 (*easy*), and 12.56 (*easy*). It means the introduction section, educational writing genre (Kawase, 2015) received the most grammatical complexity, and the methodology section was the least one.

Table 5. Grammatical complexity of 2016's thesis

	C1	C2	C3	C4	C5
Max	20.36	20.11	16.45	19.23	19.82
Min	13.68	13.34	8.66	7.01	11.65
Mean	16.86	16.06	12.58	12.64	16.45

The average MLS of C1, C2, C3, C4, and C5 of both 2015 and 2016's MLS is respectively 16.40 (*fairly easy*), 15.82 (*fairly easy*), 12.74 (*easy*), 12.20 (*easy*), and 15.55 (*fairly easy*). Comparing the MLSes of both 2015 and 2016's English undergraduate theses suggests some important implications. Firstly, both the introduction sections of 2015 and 2016's theses had the highest grammatical complexity. Secondly, the entire MLS of 2016's undergraduate theses, except C3, are greater than those of 2015's, statistically evidenced by the deviated mean MLS of 2015 (14.16) and 2016's (14.92) theses, 0.76. Thirdly, such finding syntactically testifies the graduate's English writing growth.

Though the current study did not focus on reasons for the grammatical complexity growth in 2016's English undergraduate theses, it is obvious that sentence length is a robust measure of sentence structure (Vieira, Picoli, & Mendes, 2018). This means that the growth of the MLS predicts undergraduate's improved writing. Furthermore, such MLS growth confirms

that language is basically systematic and learnable (Dakhi, 2016).

Additional factor making the finding reasonable is learners' cognitive diversity. Obviously, students have different abilities. In this regard, it is normal that MLSes of 2015 and 2016's graduates' writing ability are different. Some similar findings showing the learners' different skill. Muslim (2014) reports that EFL students' writing ability was significantly different and Bauerly and Gottwald (2009) find that the complexity level of fluent and stuttered utterances produced by children was significantly different exemplify it.

However, the grammatical complexity growth of the 2016's theses did not meet MLS standard of academic discourse. Consulting Table 1, the 2016's undergraduate theses are identical to the 6th graders of American products. Therefore, this strengthens Pan's claim (2016) that academic writing is grammatically complex. Similar evidence of the complexity of the writing was reported by Javed, Wu, and Nazli (2013) that the overall performance of all their research respondents was better in comprehension as compared to other sub-skills, namely word completion, sentence making/syntax, tenses/grammar, and handwriting. In a different context, Ling and Ling (2008) confirmed the writing complexity by arguing that international students in a Canadian university passed TWE (Test of Written English) after repeatedly doing it.

### Relating lexical density and grammatical complexity

Relating the lexical density and grammatical complexity shows the 2015's language effectiveness of undergraduate thesis, i.e. lexical density (42.88) and grammatical complexity (14.16) and the 2016's i.e. lexical density (41.41) and (14.92). The 2015's lexical density consulted with Flesch's theory shows that they are fairly difficult and are estimated written by some American high school students. On the other hand, its MLS index (14.16) is fairly easy,

produced by the sixth American graders. The 2016's lexical density is difficult and estimated written by high school or some college American students, and its MLS index is identical to the 2015's. Averagely, the lexical density is 42.14 and grammatical density is 14.54. Interestingly, lexical density interpreted as a high school or some college of American student's product, deviating the MLS, is a sixth American grader's product.

One of the reasons what MLS makes low is what Saaristo (2015) reported. He argued grammar understood as a metalinguistic set of (also normative) statements of regularities in language, which is the way most students think of grammar, results in the bad grammatical complexity of the undergraduate thesis. This is due to the fact that in writing process, grammar is obliged to be a skill, that is something that we have to do and practice, not a knowledge. However, some techniques to improve the MLS, though it lowers the lexical density, is the use of direct speech, frequent use of opening and closing devices, of connectives, of copula and of pronouns (Stegan, 2003).

Conversely, an effective way to improve lexical density is through vocabulary mastery. Regardless of L2 lexical density proficiency has a differential impact on EFL learners' summary writing (Baba, 2009), lexical items still hold a crucial role in language proficiency. It is because vocabulary is a basis for communicating either in verbal or nonverbal forms. Referring to this, meeting the received lexical density requires lexical sophistication, diversity, and richness.

### **Factors influencing language effectiveness**

#### ***Identity awareness***

It was reported personal consciousness and awareness as English lecturers, professional identity, led to a complete comprehension of some academic efforts developing teaching skills, particularly language skills, language teaching, and ICT. The academic activities, the action, including conducting research,

attending scientific seminars, workshops, and conferences, reading, and designing teaching equipment make the lecturers' responsibilities concrete. A similar research finding reported that the participants, in the process of gaining self-awareness and self-knowledge, experienced themselves as approaching professional situations in new ways, gained theories and methods, which they consider as useful in understanding their every-day professional practices and showed a change in their experience of "who they are" as professionals. This, defining the role of identity awareness in a workplace, can be seen in the themes "awareness of personal resonance", "awareness personal point of reference", and in "situational awareness," (Andr n, 2012).

Importance of self-awareness in learning has been a longstanding study. Oscarson (2009) discovered both teachers and students considered student self-assessments as contributing valuable additional information to ordinary tutoring and testing. Ghamari and Khatib (2011) reported that there was a mutual and dynamic relationship between identity and language learning. Furthermore, in chemistry teaching, Alkan and Erdem (2014) also confirmed that there was relationship between metacognitive awareness, competency perception, and teacher self-efficacy.

Oyserman, Elmore, and Smith (2012) stated identities are the traits and characteristics, social relations, roles, and social group memberships. In this regard, the personal identity awareness and profession as English lecturer, playing a central role, define the roles, consequently determine the efforts saving the lecturer's face.

The core definition of identity, furthermore, is manifested into three main domains. It consists of the past-what used to be true of one, the present-what is true of one now, or the future-the person one expects or wishes to become, the person one feels obligated to try to become, or the person one fears one may become. The past refers to EFL learners' learning quality from which they acquire the true knowledge. The

present is concerned with students' current efforts in EFL learning either in classrooms or at home. Finally, the future is defined as the EFL learners' dreams and expectations.

### ***Personal experience***

No denies that experience as the best teacher; therefore is a final and validated truth shared to any individuals' frame of reference. In learning language context, more specifically writing, experience is viewed as a schemata. The schemata is a pre-existing knowledge of the world, a collection of a concept including background knowledge of content, text structure, and hierarchical organization of the text (Fushan, 2014).

The schemata is enormously useful in EFL learning. There have been many scientific studies testifying it. According to Ferdipour and Delavar (2011) the schemata, parts of macrostructure of text, have a significant effect on written communication. Still about the schemata, Radzi and Aziz (2014) discovered that content schemata had influenced the learners' text comprehension.

On EFL teaching, conversely, the experience deals with teaching experience. EFL teachers' various experiences hold a key role in influencing EFL learners' behavior. Thus, an account for types of experience and teacher professionalism is interesting since different teachers have different experiences and then different orientations in teaching. Reported by Louws, Meirink, Veen, and van Driel (2017), an evidence of different experiences resulting in different teaching orientations, early- and late-career teachers showed greater preference to learn about classroom management compared to mid-career.

However, only insightful and useful teaching is needed to accomplish EFL learning objectives. The insightful and useful teaching experiences are products of reflective thinking. Supported by Afshar and Farahani (2015), they claimed there was a significant positive correlation between reflective teaching and reflective thinking. It indicates that the insightful and useful EFL

teaching experience are positively obtained through teachers' reflective thinking.

According to the present study, attractiveness, revision, feasibility, and practicality of literacy skills result in the teaching and learning interest, consequently becoming stored into a longterm memory forming the teaching English writing. Some related studies support such findings. The attractiveness predicted well-being and social connectiveness (Plaut, Adams & Anderson, 2009); subsequently influenced the great physical and psychological health, student-student interaction and student-teacher interaction.

Views on revision or reversibility role in writing have, although, changed dramatically over the last two decades, revision and its strategies still hold a vital role in writing process. This is in line with Woo, Chu, and Li's (2013) argument that peer-feedback sheds light on influence of peer-feedback, one of the strategies of revision, on the writing process. Automated writing evaluation (AWE), another strategy on revision, is helpful for ESL writers to improve linguistic accuracy (Li, Link, & Hegelheimer, 2015). However, an account for reviewer and peer-feedback provider has to be considered as only experienced writers can do it. Reported by Calkin (2018), it was explained since the writing is an inner behavior, only the writer could observe and review it.

Moreover, feasibility study on language learning, a procedure to predict outcome of an investigation examination, or assessment of a planned schema along with possible gain (Mukherjee & Roy, 2017), holds an important role in deciding whether there is possibility to achieve the learning outcomes. Study on the importance of feasibility studies has been conducted by Wuest *et al.* (2015) and by Organisation for Economic Co-operation and Development or OECD (2013) reminding that feasibility is not an end in itself, but rather a stimulus to deeper professional dialogue on desired learning outcomes and the teaching approaches needed to achieve them. Learning feasibility

adopted from Mukherjee and Roy (2017) comprises technical, economic, legal, and operational feasibility.

Finally, practicality is assumed as a determinant factor of the well-planned execution of writing project in EFL context. Pouliot (2008) explored three dimensions of practicality: instrumental rationality (logic of consequences), norm-following (logic of appropriateness), and communicative action (logic of arguing).

### **Motivation**

It is believed something getting done is highly influenced by the degree of the needs possibly met (Maslow, 1954), a psychological factor (Dwihandini, Marhaeni, & Suamajaya, 2013). Rasekh and Barati (2014) confirmed that motivation contributes to the learning environment, teachers, techniques, and the material. According to Dakhi and Damanik (2018) curiosity (92.22%), challenge (83%), compliance (77.67%), competition in reading (77.50%), reading importance (73.33%), reading involvement (72.50%), recognition (68.33%), reading for grades (67.08%), reading efficacy (59.44%), avoidance (59.17), and social reason (55.56) are motivation variables of tenth graders at SMA Negeri 55, Jakarta.

Another factor making someone motivated to do something is feedback. Feedback provision through teaching, a need for improving the hard skill and pedagogic skill, motivates the teacher of English writing. The feedback is viewed as an information provided by an agent (e.g., teacher, peer, book, parent, experience) regarding aspects of one's performance or understanding. Although feedback has a powerful influence on learning and achievement, its type produces different output (Hattie & Timperley, 2007). Three factors predict an evaluative feedback, tested by Azzam and Whyte (2018), are delivery strategy, accuracy, and type (positive/negative).

Therefore, strategy on how to provide the feedback has to be taken into account by

English teachers. One of the strategies enhancing the feedback quality is by applying a web application, the Minute Feedback System (MFS). Barrett, *et al.* (2018) reported that about 98.6% of students (138 women, 140 men) used MFS. They asked the feedback more from faculty (26.3 requests per individual) compared to trainees (16.4 requests per individual).

On the contrary, a responsibility being a lecturer and of course learner, the duty, has driven the teaching writing. It is viewed as a bundle of obligations associated with a job or function, like teacher and learner of writing teaching, as narrowly defined as a role, job description, by which function is described. As Francis (2012) stated teachers have the charge to set environmental conditions for the learner, the teacher is the key external component, collaborating with the student to encourage, cultivating and drawing out the student's motivation to learn, the responsibility is clearly defined. Thus, teaching and learning writing is a social responsibility (Sihem, 2013).

Furthermore, teaching boredom, another motivation variable, on the other hand, puts an action on the meaningless and unattractive struggle of process of a possible background of the undergraduate thesis lexical density and grammatical complexity. Though boredom is defined as an interrelated and inseparable emotional, motivational, perceptual and cognitive concomitants, it serves to encourage people to seek new goals and experiences and provides a valuable adaptive function by signalling its time to pursue a goal of a writing project (Bench & Lench, 2013). Lastly, an experience, problem-solving, and role model to be an objective examiner have totally met the needs in teaching and learning writing.

According to the present study, it revealed, surprisingly, no negative external motivation implying the threat absence as the positive external is practiced, but positive internal and negative internal ones exist. The feedback provision, responsibility, duty, loyalty, and good team-work function



as the positive external motivation, and experience, role model and objective examiner are treated as positive internal motivation through which positive motivation dominates over the negative one. Moreover, the boredom, e.g. meaningless and unattractive teaching and learning academic writing meets the negative internal motivation.

### ***Linguistic awareness and application***

Any living languages have vocabulary and system of structure, a theoretical background language *learnability* claim as learning by system has made teaching possible, a basic element of language teaching and language production. Linguistic awareness consists in the mental recognition, a state of knowing the cultural features of both spoken and written discourse hidden in linguistic manifestation, the acceptable application and its mutual connection with the other studies.

Ideally, a good theoretical concept understanding is definitely appropriately interpreted into an acceptably correct application, i.e. spoken and written discourse linguistic features differ. Consequently "learning language" and "learning about the language" are obviously traced for which grammar as skill application in the scientific undergraduate thesis, not as science, is entirely executed. Mahadouche (2010) confirms writing awareness difficulty contributes on the writing skill supports the urgency of linguistic awareness and application to some extent and strengthens linguistic proficiency as a dominant factor on the students' research report (Dwihandini, Marhaeni, & Suamajaya, 2013).

### ***Conceptual and mechanical competence***

A conceptual competence requiring a creativity to conceive ideas and transmute them into an observably physical object (Egiri & Wuritka, 2016) is highly identical to the very beginning process of language production ability including writing as it precedes the formulation, articulation, and self-monitoring phase. A syntactic thinking

process of language production, a non-syntactic or imaginary one definitely proceeds a logical and socially acceptable idea with formal form according to the frame of social reference. Human language conceptualization, some are universal and others are language-specific, is defined in different physical and cultural environments. Even though language conceptualization is complex since content selection, syntactic form selection, and sound sequences are human problem, a study on how to conceptualize and communicate conducted through the use of drawing evidence that language conceptualization can be trained. In this study, mastering the topic and research methodology defines conceptual competence. A holistic view on the topic of the writing puts the writer on the right access to the writing success, and research methodology frames the nature of the question and establish a path along which research (Jonker & Pennik, 2010) and its report can be directed. Competency in choosing the topic is required as it functions to establish a well-defined task environment dimension of the writing, a process-based approach to writing (Bayat, 2014). On the contrary, the mechanics and coherence application to the writing completes the mechanical variables. An emphasis on perceived grammar, spelling, and usage including mechanics and coherence application is product-based. The product approach to writing according to Palpanada, Salam, and Ismail (2014) completely encompasses familiarization, controlled writing, guided writing, and free writing.

Regarding the previous research finding and discussion, some implications are provided as follows:

- a. The distinction of lexical density and grammatical complexity index of undergraduate thesis according to its unit of chapter and time written confirms the writing skill improvement, the dynamics of language, an altered output driven by the context of the writing purpose and strengthens the writing as a complex integrated skill.

- b. The lexical density interpretation, a high school or some college of American student's product, deviates the MLS, a sixth American grader's product. Ideally, MLS index is not an obstacle increasing the syntactic complexity since in this study grammatical complexity is merely an average word length in sentence, a non-structurally and semantically-sentence-based index. An unrecognized characteristic of English language sentence by the undergraduates, therefore, is obviously captured.
- c. Although the fifth chapter is the core unit of the research report providing the scientific answer of the problem and is presumably frequently revised and reviewed by thesis advisors, it is lexically the most ineffective part compared to the others since. This is to confirm a negative attitude on research finding and to predict a mental boredom of the writer.
- d. Elaborating motivation of teaching and learning English writing, the feedback provision, responsibility, duty, loyalty, and good team-work function as the positive external motivation, and experience, role model and objective examiner are treated as positive internal motivation through which positive motivation dominates over the negative one. Moreover, the boredom, e.g. meaningless and unattractive teaching and learning academic writing meets the negative internal motivation. This surprisingly shows that no negative external motivation practiced, a threat.
- e. Regardless of the low grammatical complexity index, conceptual and mechanical competency as a determinant factor of the writing success, an integration of process and product-based writing approach is the finest model.

## **CONCLUSION**

Three important conclusions are drawn in this scientific study. Firstly, the diversity of lexical density realization in the undergraduate thesis according to its unit of

chapter and time composed is averagely 42.14, to some extent, it is acceptable as an American student's academic product. Secondly, the writing quality improvement assessed through grammatical complexity, 2015's MLS index is 14.16 and 2016's MLS score is 14.92, still defines its syntactical complexity mean index, 14.54, as slick fiction product of the sixth American students. Finally, determinant factor of academic writing holistically encompasses psychological factors, i.e. identity awareness, motivation, and conceptual competency, sociocultural factor, i.e. personal experience, and linguistic factors: linguistic awareness and application and mechanical competency.

To acquire a sustainable research project and improve linguistically academic acceptance of the undergraduate thesis, more generally English writing, some suggestions and recommendations are listed:

- 1) The tolerated index of undergraduate thesis lexical density does not guarantee the academic and technical content as this research employed a calculation on-line system; thus, for its pure acceptance, it has to be further studied through semantic-based analysis.
- 2) Since the research interpretation was consulted with the Flesch's theory, an Indonesian language text readability index is an urgently needed for linguists' research.
- 3) The lexical density index decrease and the grammatical complexity increase have to be seriously taken into account by English lecturers and students of pseudonym university. A well-defined, planned, and conducted both process and product-based approach to writing are the appropriately finest model. A detailed concept and well-trained writing syntactically constructing a practical, academic and scientific thesis product are advisedly to be executed.

## **ACKNOWLEDGEMENT**

This research was entirely funded by the English Education Department (EED),

Faculty of Teacher Training and Education,  
Universitas Kristen Indonesia (UKI) in 2017.

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