

Applying Lexical Density and Lexical Diversity for developing Writing Quality and Quantity

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Introduction:

The changes in pupil's writing could be helpful in seeking a correlation to the student's sense of self-efficacy in a writing intensive, learning experience (Voorhees, 2019). The lexical density and lexical diversity of a piece of writing have links to inner processes, such as a person's perceived self-efficacy (Bandura, 2012). Linking lexical density and lexical diversity to an emotional process is an essential connection for the current study, when the aim is to explore any possible relation between how an individual writes (participation) and how they feel about being able to achieve their goals (self-efficacy). One focus of the current study is on the words that the pupils choose to utilize in the discussion forums (lexical density and lexical diversity). Course social influences, the influences of their emotional experiences, and their actual vocabulary level influenced the lexical density of the pupil's writing (Paribakht & Webb, 2015). Positive experiences can yield positive emotions within pupils and, possibly, lead to subsequent increases in perceived self-efficacy (Voorhees, 2019).

There are many Components of PERMA, The five elements of well-being theory (PERMA) are "positive emotions, engagement, relationships, meaning and achievement" (Seligman, 2012). Pupils need to cultivate the five elements of PERMA to raise their levels of perceived self-efficacy during class. The diversity of PERMA as a theory correlates with the diversity of learners in the classroom, such as visual, auditory, or kinesthetic learners, or a combination of the three. The basis of PERMA is the five elements of well-being, which Seligman (2012) crafted into a psychological theory, namely "positive emotion, engagement, relationships, meaning, and accomplishment". PERMA is relevant to the current study, because each of the five components of the theory is involved in the perceived self-efficacy of the pupil. The

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first component is positive emotion. While setting goals is more important to engagement than achieving the goals, goal achievement is more important for positive moods. Positive mood leads to an increase in goal regulation. Depressed mood leads to contemplation of achieving goals, but not doing so (Bindl, Parker, Totterdell, & Hagger-Johnson, 2012). In the classroom, the aforementioned correlations may mean that pupils who set goals for their discussion work, and who feel that they can achieve those goals (self-efficacy), are more likely to engage fully in the discussion forum work than pupils who achieve goals, but who do not put much contemplation into them. Additionally, pupils who set their discussion work goals are more likely to exhibit positive moods, which are beneficial. However, when pupils experience negative thoughts about their performance towards their goals within the classroom, those negative thoughts can directly influence their level of perceived self-efficacy (Breso, Schaufeli, & Salanova, 2011).

The second component of PERMA is engagement. Engagement, in general, is a positive state of mind, in which an individual experiences a sense of vigor when taking on a particular task (Schaufeli & Bakker, 2004). Pupil engagement in the classroom is also known as study engagement. Study engagement involves a positive state of mind, in which a pupil experiences a sense of vigor and positive emotions when engaged in a task (Salanova, Schaufeli, Martinez, & Bresó, 2010). Pupils who engage positively in study tend to put more effort into the given tasks, and they even go above and beyond their assignments for their own sense of fulfillment. They tend to set study goals for themselves and, due to their high levels of engagement in the study tasks, they feel more confident in their ability to achieve those goals (Ouweneel, Schaufeli, & Le Blanc, 2013). Thus, highly engaged pupils will exhibit higher levels of self-efficacy than pupils who are not highly engaged in study tasks.

Engagement is an active measure of well-being. The vigor of a person's mindset directly affects his/her performance. Self-efficacy is a reliable predictor of engagement (Ouweneel, Le Blanc, & Schaufeli, 2013). Thus, if a person's self-efficacy is high, his/her engagement will also be high and vice versa. Self-efficacy also has links to greater levels of task involvement, which leads to goal setting and, ultimately, increased engagement.

People tend to be more positive when they set goals for themselves and envision themselves reaching those goals (Ouweneel, Le

Blanc, & Schaufeli, 2013). Setting goals is more important to engagement than actually attaining the goals. Concerning pupil engagement within the discussion of the classroom, the goals a pupil sets for completing the work could be critical in his/her levels of engagement. Positive emotions might be detectable via the pupil's word choice in his/her written discussion work. If he/she has set goals and he/she is engaged, his/her rate of positive word choice could be higher (Ouweneel, Schaufeli, & Le Blanc, 2013). Any increase in positive word choice may be detectable via the lexical density of the pupil's writing. Therefore, it is important to assess lexical density, because it can demonstrate changes in a pupil's emotional state.

The third component of PERMA is relationships. The perceived self-efficacy of a pupil depends on what happens in the discussion of the classroom, because that is the primary source of peer relationships in the virtual classroom. The quality of peer interactions within the discussion directly affects a pupil's self-regulation and, consequently, his/her self-efficacy. When levels of engagement fluctuate, so does pupil motivation (Kassab, Al-Shafei, Salem, & Otoom, 2015). Through peer relationships fostered in discussion, pupils are often more engaged in their study tasks, and they feel more motivated towards their goals.

Written interaction in the discussion encourages relationships in the classroom. Pupils who actively participate with positive interactions promote engagement in the discussion. Prior research indicates that positive peer interaction leads to increased achievement and engagement in the academic setting (Leibold, 2000; Newmann, Wehlage, & Lamborn, 1992; Pryor, 1994; Wehlage, Rutter, Smith, Lesko, & Fernandez, 1989). When pupils experience positive emotions due to satisfaction with peer relationships within the discussion, this reinforces their emotional investment in the course. In turn, the pupil's levels of engagement increase because of his/her positive emotions, and his/her motivation increases as well (Han & Johnson, 2012). As previously explained, there is a direct correlation in the empirical research between levels of engagement and levels of self-efficacy. Thus, peer relationships in the discussion directly affect an pupil's perceived self-efficacy.

The fourth component of PERMA is meaning. The discussion tasks must have meaning for the pupils; otherwise, they are less likely to engage in the work. Finding meaning in one's work is a concept that goes beyond the classroom, but that is also relevant to the classroom. Students must find meaning in the work that they do. Without meaning, their motivation, engagement, and self-efficacy will suffer (Mason,

2013). Meaning is often found in discussion work when the pupil can make connections between the discussion prompts and his/her experiences. If the pupil reads the prompt and visualizes a connection, he/she will be able to visualize him/herself completing the discussion work, and he/she will more readily engage in the discussion (Welser, Gleave, Fisher, & Smith, 2007).

The fifth component of PERMA is accomplishment. Self-efficacy has links to academic achievement in that it forms the basis by which the pupil engages and is motivated to do work. Academic accomplishment not only depends on self-efficacy, but also on personality traits such as openness and conscientiousness (Caprara et al., 2011). Self-efficacious pupils not only believe that they can intellectually engage with the required tasks, but they also believe in their capabilities to manage their time to be successful. According to Zuffiano et al. (2013) a pupil's faith that they can regulate their learning is the second most imperative predictor of achievement, with prior success being the most important predictor. Many learners who persist in this environment are self-efficacious and self-regulated (Tseng & Kuo, 2010). If they were not, they might not be able to take charge of their learning experiences and to accomplish their goals.

In an attempt to describe PERMA further, Seligman (2011) explained that people who are high self-regulators, to the level of what is known as true grit, are not only intrinsically driven due to goal orientation, but also passionate about what they are doing. When obstacles arise, the true grit individual will persist in the face of the obstacle, recognizing that their perception of the obstacle is what will make or break the experience (Seligman, 2012). Therefore, the true grit individual feels self-empowered and in control of their destiny.

Schunk (1991) explained that self-efficacious individuals parallel the characteristics of the true grit individual. When faced with obstacles, the person with a high level of self-efficacy will increase their effort and persist in the given task until they triumphs (Kennedy, 2013). As Seligman pointed to the social components of PERMA, Bandura (2012) also explained that peer feedback is one font of self-efficacy information for the individual. Pupils can have a more personalized learning experience through peer feedback and, as such, they can perform better on assessments (Kulkarni et al., 2015). Even the biological changes a pupil experiences when engaging in research, writing, or social exchanges in the classroom, such as changes in heart

rate, or sweating, can give the pupil feedback relating to their self-efficacy. If the pupil experiences a physical response to a discussion exchange that alludes to anxiety, they might not feel that they will be able to do well on the given task (Van Dinther et al., 2011). True grit individuals are resilient, and their stress response mechanism, at the biological level, allows them to switch off the cortisol rush that leaves non-resilient people frazzled (Stix, 2011).

The current study adds to/supports the PERMA model, because being able to detect changes in self-efficacy via the lexical density and lexical diversity of a pupil's written work gives quantifiable evidence of how the pupil's well-being changes during a course. Coniam (2004) found that lexical density and lexical diversity are critical components of the evaluation of textual information. In corpus linguistics, lexical density is an appropriate measure by which to conduct a comparison of corpora to correlate the word lists a measurement tool (such as AMW) generates, from which researchers can extract a degree of significance. In summary, the five components of Seligman's PERMA are relevant to self-efficacy. The true grit individual is often in the classroom, and their biological changes while engaging in their school work can give clues about changes in their self-efficacy. Resilience, a character trait of the true grit individual, also correlates with self-efficacy.

Review of the literature

There are many Studies related to Gender , according to Huffman et al. (2013), masculinity has an effect on self-efficacy concerning technology. Thus, female online students begin an online program with lower expectations and self-efficacy due to their gender roles (Huffman et al., 2013). Additionally, Gonzalez-Gomez et al. (2012) posited that female online students use online discussion forums more than male online students. The contradiction in the above findings may be because females typically look for social support, as well as offering social support, when in online learning communicates (Gefen & Ridings, 2005). Therefore, it is plausible to state that, although a female's expectations might be lower than a male's when entering an online program, her use of discussion forums to interact with peers and faculty will be higher in general. Equally relevant to the current study is the issue of gender on how communicative an individual is. The pervasive idea regarding this issue is that females are more talkative than males.

Mehl, Vazire, Ramirez-Esparza, Slatcher, and Pennebaker (2007) utilized an electronically activated recorder to capture snippets

of conversation throughout the daily lives of participants. The participants could not detect whether the electronically activated recorder was recording or not. The words the device captured then underwent transcription, so the researchers could quantify the word count and estimate a daily word count. Over a 6-year period, Mehl et al. tracked 396 participants using the electronically activated recorder. Of the 396 participants, females comprised 210 and males comprised 186. The results of the study indicated that the numbers of words males and females spoke were not statistically significantly different.

Mehl et al.'s (2007) research is relevant to the current study, because male and female students might undergo influence from the widely held notion that females are more communicative than males, and this could affect how both genders engage in the discussion forums through written communication. A female student might feel that she will be naturally predisposed to do better in communicating her ideas via a discussion forum because of her gender (Mehl et al., 2007). The hurdle she might idealize for herself could be the idea that she will not do well with navigating the technology (Huffman et al., 2013)

Another study that supported that idea of gender differences in how people communicate was that of Pennebaker, Groom, Loew, and Dabbs (2004), which tracked two male participants in a longitudinal study during a process of receiving testosterone treatments for different reasons. The results of the study indicated that testosterone had a statistically significant influence on the level and type of communication of the two males. The males experienced a loss of attention from making social connections when receiving testosterone treatment. Nevertheless, Pennebaker et al. also noted that the influence of testosterone on social behavior and communication had a lot to do with the situation. If a person's survival was threatened, then testosterone's influence over acts of aggression (for example) was higher. Concerning the current study, engaging in the discussion work for an online class did not threaten survival; however, students can experience high levels of stress when working in an online course. Stress is a situational factor that can trigger the testosterone effect (Goldey & Van Anders, 2011).

There are many Studies related to Self-Regulation, a classroom community that fosters student engagement through collaborative learning environments can add to an increase in student achievement. When students engage in collaborative learning environments, they are motivated to participate and , as such, they utilize self- regulation skills

to keep up with their peers within the course. Critical thinking and connectedness result from students identifying themselves as a part of a learning community. Higher achievement results when students perceive more connectedness in an online classroom, such as when they can share personal experiences and thoughts about the topics they study in the online discussion forums (Young & Bruce, 2011). Based on Keller's model of motivational design of instruction (as cited in Kim & Frick, 2011), there are four components to student motivation and engagement: confidence, attention, relevance, and satisfaction. A student's positive and negative emotional experiences as she moves through an online degree program will influence her overall opinion of herself and her experience. The value a student places on the material she is learning, coupled with perceived self-efficacy and her opinion about the instruction, will combine with the student's emotional experiences to influence learning outcomes (Marchand & Gutierrez, 2012).

Joo et al.'s (2011) study is relevant to the current study, because the discussion experience within a course is an important course element in which students must engage and in which they demonstrate their learning through writing. According to Csikszentmihalyi (2014), if students feel they are learning, then they feel more capable of attaining their goals to pass the class. If the course learning tools are user friendly, then the students can engage in digesting the information, instead of grappling with ease of use issues. The applicability of the knowledge and skills that the student attains in an online course could augment her perceived self-efficacy (Harackiewicz, Tibbetts, Canning, & Hyde, 2014).

Online discussions are a proper tool for fostering student learning for a variety of reasons. Online discussion forums offer the online student freedom to learn when she wants, equal participation, and the opportunity to exercise higher order thinking skills when completing discussion work (Wu & Hiltz, 2004). The facilitation of higher order thinking skills in the online classroom, drawing on Bloom's Taxonomy, primarily involves the ways the instructor facilitates the online discussion forums (Whiteley, 2014). Students build higher order thinking skills, which are harder to cultivate, due to the connections that the instructor makes between the theoretical material they study and real-world experiences. By modeling the aforementioned connections via responses to student posts, the instructor encourages the students also to make those types of connections when they think about the topics that they read and discuss (Whiteley, 2014).

Additionally, students who engage in online discussion forum work learn to apply theoretical knowledge to real-world experiences. There is a link between the student's perceived application of discussion work in an online classroom and an increase in her self-efficacy (Joo et al., 2011). Female students have less confidence about their ability to operate a computer; therefore, they come into an online discussion forum at a disadvantage concerning self-efficacy (Chang et al., 2014). On the other hand, female students have higher verbal abilities than male students, so they come into an online discussion forum with an advantage regarding verbal acuity (Wu & Hiltz, 2004). Students who get enjoyment out of online discussion feel that they learn more (Gomez, Wu, & Passerini, 2010). Students who perceive their learning as having increased also experience an increase in self-efficacy (Liaw & Huang, 2013).

There are many studies related to Self-Efficacy, according to Garcia and Fidalgo (2008), self-efficacy has four main influences: "enactive experiences, vicarious experiences, verbal persuasion, and physiological reactions". Enactive experiences in an online class discussion forum refers to discussion posts that the instructor deems well written. Well written refers to the extent to which the discussion forum posts achieved the assignment outcomes. Vicarious experiences in an online class discussion forum refer to the writing models that the students observe within the discussion forum. Delotell, Millam, and Reinhardt's (2011) work regarding the importance of the instructor's written responses to pupils in the discussion forum as it relates to modeling the type of writing that is desired from students is of particular interest when contemplating vicarious experiences in an online class discussion forum. According to Garcia and Fidalgo, students will begin to model the instructor's discussion response format, writing style, and breadth of research in their online discussion posts.

Lane, and Kyprianou (2004), assessed self-efficacy measures of 205 postgraduate management students, including objective and subjective performance, self-esteem, and academic success. They measured perceived self-efficacy using Bandura's rating scale from 0-100. They measured objective performance assessment by reviewing the students' first-degree classifications. They assessed subjective performance with a 100-point rating scale on perceived academic success. They assessed self-esteem using Rosenberg's self-esteem scale. Finally, they measured academic success using a 20-point scale,

assessing the students' work against the scale at the end of 15 weeks. The results of Lane et al.'s study indicated that the correlation between self-esteem and self-efficacy was such that self-efficacy drives self-esteem. Self-efficacy also correlated directly with academic performance (Lane et al., 2004).

Verbal persuasion in an online class discussion forum differs from vicarious experiences, in that it refers to the feedback that students receive from an instructor about their written discussion work (Garcia & Fidalgo, 2008). For example, if the instructor prefaces his or her response post with "Good work!" the student might perceive positive feedback regarding her post. Garcia and Fidalgo (2008) explained that if the student feels that the feedback from her model (instructor) is credible, then she will perceive value in the model and feedback, thus experiencing an increase in self-efficacy if she can emulate that model. Perceived physiological reactions in an online class discussion forum refer to the emotional reactions the student has to the writing experience, as well as the way that she self-regulates her behavior (Shen & Chen, 2014). If the student uses specific methods to control her emotional responses (such as listening to relaxing music to reduce stress levels while writing), it directly affects her self-efficacy.

Villalon Molina (2010) conducted three small studies within one large study to understand the complexity of writing conceptions amongst secondary and university students. The research aims of Study 1 included identifying which writing conceptions students use most often in university and secondary school writing. The two conceptions Villalon Molina identified and tested were epistemic and reproductive. Epistemic writing conceptions refer to learning by making a synthesis of concepts and expressing that synthesis in writing (Villalon Molina, 2010). Reproductive writing conceptions refer to learning by reproducing what one reads or hears, and expressing that reproduction in writing (Villalon Molina, 2010). Villalon Molina also assessed and analyzed the function and use, revision and modification, and planning and textualization of the writing within the two conceptions. The different facets of these conceptions included level of education of the students, their gender, and their amount of knowledge for the relevant domains. The researcher aims of Study 2 were to discover whether a relationship existed between self-efficacy, writing conceptions, and any effects that might be present in academic performance for students studying in the social sciences (Villalon Molina, 2010). The research aims of Study 3 were to discover whether the writing conceptions of the secondary students related to the quality of their written output and the

learning they felt they had acquired by engaging in the writing task (Villalon Molina, 2010).

The results of Study 1 indicated that secondary students used a more reproductive conception of writing, whereas university students used a more epistemic writing conception. The results were not absolute; rather, these conclusions are generalizations between the two groups, with exceptions being present in both groups (Villalon Molina, 2010). The analysis of the different facets of epistemic and reproductive writing conceptions yielded evidence that epistemic writing conceptions are not intuitive, and they are not the norm. Additionally, planning and textualization were the most complicated facets of epistemic writing for both university students and secondary students (Villalon Molina, 2010). The results of Study 2 indicated that students held high perceptions of themselves regarding writing competency. The results of Study 3 showed that students at the high-school and university levels exhibited difficulties in writing a synthesis of what they had learned (epistemic). Students who held more epistemic conceptions of writing displayed higher quality integrations in writing, and they reported a deeper level of concept learning (Villalon Molina, 2010).

The results of the study indicate that it is possible to identify two independent writing conceptions clearly, and, once identified, they clearly exhibit distinguishing facets. The identification of distinguishing facets amongst the writing conceptions is an original idea that fills a gap in the research relating to a more sophisticated understanding of writing conceptions (Villalon Molina, 2010). This is relevant to the current study, because the conceptions that a student holds about writing link to her perceived self-efficacy, and they directly influence her outcomes on performance tasks within a course (Villalon Molina, 2010).

Akyol and Garrison (2011) focused on discovering a framework that leads to profound and meaningful learning experiences. Their research aims were determining whether online and blended virtual communities can foster cognitive presence in students, which in turn can give way to higher order learning outcomes and processes. Akyol and Garrison organized a graduate course about blended learning. They presented the course in an online format in the Fall and in a blended course format in the Winter. The basis for the course was the Community of Inquiry Framework (CoI).

The outcomes of their study related to learning outcomes and learning processes. The transcript analysis results of their weekly online discussions, coupled with the outcome of their interviews, gave a snapshot of the students' levels of cognitive presence during the course. The students' grades and CoI survey results (indicating their perceived satisfaction) demonstrated that, overall, students felt that they achieved a high degree of learning during the course (Akyol & Garrison, 2011). Based on perceived high levels of achievement by students in a higher education setting, the students' self-efficacy also increased. Thus, there is a relationship between achievement in higher education and greater self-efficacy (Marsh & Martin, 2011; Sax, Kanny, Riggers-Piehl, Whang, & Paulson, 2015).

There are many studies related to Language, language, at its core, is a social construct (Argamon, Dhawle, Koppel, & Pennebaker, 2005). People use language to express their inner processes and, in doing so, they communicate more effectively with others. Thus, the choice of words an individual uses not only correlates with the strength of the person's emotional experiences, but also with his or her richness of vocabulary. For example, a person with an extroverted personality is more likely to use function words that indicate a sense of certainty, such as: am, second, enough, and very (Nagy & Townsend, 2012). If one can detect personality via a person's written work, this indicates that one can identify emotional and cognitive states via writing. This is critical when looking for a link between self-efficacy and the lexical density of written work.

Hemphill and Otterbacher (2012) compared the writing styles of males and females. They pinpointed a clear difference in style between the two genders. The results indicated that females use social styles of writing that align them closely with their peers, while males use a more broadcast style of writing, which sets them apart from the crowd. These writing styles were pervasive amongst males and females in an online environment. Hemphill and Otterbacher developed communication accommodation theory (CAT) to support their feelings and to form a framework for their study; as such, CAT is relevant to the current study, because it supports the third element of PERMA: relationships (Giles & Soliz, 2014). Hemphill and Otterbacher's work can support the current study regarding gender, self-efficacy, and lexical density.

Hemphill and Otterbacher (2012) used CAT as the framework for their study. CAT is relevant to the current study, because it supports the third element (relationships and self-efficacy) of PERMA. CAT refers to the notion of Howard Giles (2008) that when human

beings communicate, they adjust their gestures, vocal patterns, and word choices depending on the person with whom they are talking. The changes that people make when verbally and nonverbally communicating are indicative of social decisions they make (Giles, 2008). For example, a student might use slang when speaking with peers, but he or she might use more formal vocabulary when talking with an instructor. There is a critical relationship between the ways in which people communicate (based on CAT) and written communication in threaded online discussion forums. The social decisions that students make when communicating via writing in the discussion forums have links to emotional processes (Hansen, Fabriz, & Stehle, 2015). CAT also points to why people make particular linguistic accommodations when speaking; namely convergence accommodation (Giles, 2008).

Convergence happens when people make changes to their speech and nonverbal communication to fit in with others (Giles, 2008). An obvious example of convergence is an adolescent who uses particular vocabulary, speech intonation, and gestures when hanging around peers of a particular crowd. The aim in adopting those features is to fit in with the crowd. Divergence, on the other hand, refers to enhancements in speech and nonverbal cues to stand out from the crowd (Giles, 2008). The online learner employs aspects of convergence and divergence via how she adapts her writing style and vocabulary, based on the person with whom she is communicating in the online classroom, and where the communication is taking place. Written communication in the class lounge will be more informal than written communication in a required discussion forum (Niederhoffer & Pennebaker, 2002).

Reading and lexical density, in the past , it seemed that the processes involved in reading and writing offline would be the same as those for reading and writing online. With evolving new technology, the actual processes of literacy have changed as well (Vogler et al., 2013). By definition, literacy refers to "the ability to read and write" ("Literacy, " 2015). Digital literacy has changed the very definition of what it means to be literate due to the addition and transformation of cognitive processes necessary to process digital text and digital image, and the speed with which information is accessible (Vogler et al., 2013). Due to being able to access more information at a greater speed via the internet, online students can not only do the required reading in an online course, but also read primary sources and recommended reading

on a topic. With an increase in the quantity and quality, they will also experience an increase in academic vocabulary (Van de Vord, 2010). If an online student reads a great deal, then her reading level and comprehension of the topic will improve exponentially. Concomitantly, her written output of language will also increase in density (Gourlay, Hamilton, & Lea, 2014).

The academic community writes and reviews reading assignments for a university online undergraduate program before putting them to use in the classroom to ensure that the lexical complexity of the writing is on par with expectations from a university undergraduate program (Biggs & Tang, 2011). Therefore, online undergraduate students should be able to read and write with a minimum level of lexical density (Margaryan, Littlejohn, & Vojt, 2011). With that said, the current study focused on how those levels of lexical density increase during a course, and whether those increase are indicative of other increases in self-efficacy. Collocations in written language are also pertinent to the current study. Collocations refer to "the co-occurrence of words" in spoken and written language (Jafarpour, Hashemian, & Alipour, 2013). For an online student to write fluently, she must have a reliable collocational knowledge (Coniam, 2004).

The reader's perception of the quality of the material she is reading is an important element in understanding her emotional response to reading, as well as her emotional responses during the writing process that links to the reading. Huang, Chou, and Lin (2008) raised the question of what motivates an individual to read an online source, such as a blog, and how that motivation affects how she will respond to the information after reading the blog. Through a combination of research in the existing literature and interviews with those who read blogs, the researchers created a survey. The researchers administered the survey to 246 graduate and undergraduate students at a Taiwanese university, and 204 responded (Huang et al., 2008). Based on the responses, which they subjected to factor analysis, Huang et al. discovered that the primary reason why students read blogs is the affective exchange motive. Affective exchange motive refers to why people choose a particular mode of communication (Floyd, 2014). In the online environment, this could indicate why people choose a particular social media tool, or type of website, to exchange information (Hung & Chou, 2014).

For the purpose of the current study, affective exchange motivation refers to the impulse that drives students to engage

positively in writing discussion posts. Besides wanting a good grade, they must have other motivations to engage in the activity at a high level. Huang et al.'s (2008) study is relevant to the current study, because the trust a student has in the quality of information she reads in a discussion forum influences how useful her time to engage in writing in the forum is. Additionally, the trust the student has in the quality of the information she reads influences how she views her participation in the forums, and how it helps her to reach her goals. According to Ahmadi (2012), affective exchange motivation in reading correlates to motivation in writing

There are many studies related to Personality type and writing, according to Tausczik and Pennebaker (2010), an author's personality can be determined by the way he or she writes. Researchers have detected personality traits via writing in the past using the Big Five model of personality. The Big Five model of personality covers "Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism" (Wolfradt & Pretz, 2001). Neuroticism and agreeableness are the two traits from the Big Five model that a reader who is unfamiliar with the author can detect successfully in a written online text, such as a blog (Qiu, Lin, Ramsay, & Yang, 2012). Neuroticism and extraversion were the sky personality types under test in Vaezi and Kafshgar's (2012) study, which explored the lexical density, lexical complexity, and syntactic complexity of students' written work as they related to the students' personality types and genders. The researchers focused on males and females, as well as introverts and extroverts, and they analyzed the syntactic complexity of their writing, as well as the lexical complexity. Vaezi and Kafshgar did not demonstrate lexical density as differing markedly between the writing of the sample groups; however, previous research by Gill (2003) indicated that extroverts typically write with lower lexical density than introverts. The results of Vaezi and Kafshgar's study indicated that there is a connection between the way people speak and who they are as people. Harrington and Loffredo (2010) posited that online learners tend to be more introverted than extroverted. Of additional interest to the current study is information regarding stylistics in writing from Pennebaker and King (1999). One can stylistically analyze a piece of writing for genre, affect personality, register, and writing style (Pennebaker & King, 1999). One can do so by contrasting the topic from the style. Regarding the current study, as there is already a proven link between writing and inner

processes such as personality, it may also correlate with other internal processes relating to the emotional experiences of the writer (Sullivan, 2012).

According to Condon and Ogston (as cited in Toma, 2014), synchronicity is a foundational element in human verbal interaction. Therefore, people produce verbal and written language in tandem with their peers. In an online classroom, this means that the ways in which the other students and the instructor write correlate to how the student writes. This idea is congruent with DeLotell et al.'s (2011) idea of student engagement, in which the online instructor should model the expected type and level of writing from the online student to increase student performance.

Background of the problem:

In spite of the importance of writing quality and quantity, there is a lack in writing quality and quantity among primary school pupils. Thus there is a need for finding an effective instructional strategies for developing writing quality and quantity among primary school pupils.

In order to be fully sure of the problem of this study, the researcher conducted a pilot study including some texts. It requires students to read the text and answer questions that follow it. This test has been applied to fifty of fifth year primary school pupils. The results of this pilot study confirmed the low level of the pupils in writing quality and quantity. So, it is clear that there is a great need for developing writing quality and quantity among primary school pupils. This study used lexical density and lexical diversity for developing writing quality and quantity among fifth year primary school pupils.

Statement of the problem:

The problem of the present research can be defined in the fifth year primary school pupils' inefficient writing quality and quantity. Therefore, the present study is an attempt to investigate the effectiveness of lexical density and lexical diversity for developing the writing quality and quantity among fifth year primary school pupils.

Questions of the Study:

To face this problem, the present research is an attempt to answer the following questions:

- 1- What are the lexical density and lexical diversity needed for developing writing quality and quantity among fifth grade primary school pupils?

2- What is the effect of lexical density and lexical diversity in developing writing quality and quantity among fifth grade primary school pupils?

Delimitations of the Study:

The current research is limited into the following:

- Fifty fifth graders of primary school in El-Shobban Al-Muslimeen Language School in Benha at Quliobeya Governorate, Egypt.
- Some writing quality and quantity required for the fifth year primary pupils.

Hypotheses of the study:

- 1-There are no statistically significant differences between the mean scores of the experimental group and the control group in the writing quality in the pre test.
- 2-There are no statistically significant differences between the mean scores of the experimental group and the control group in the writing quantity in the pre test.
- 3-There are statistically significant differences between the mean scores of the experimental group and the control group in the writing quality in the post test.
- 4-There are statistically significant differences between the mean scores of the experimental group and the control group in the writing quantity in the post test.
- 5-There are statistically significant differences between the mean scores of the experimental group and the control group in overall writing modes in the post test.

Instruments and materials:

To achieve the purpose of the study, two equivalent forms of writing quality and quantity test (prepared by the researcher) were used.

Participants of the study:

The participants of the present study consisted of 50 fifth year pupils from El-Shobban Al-Muslimeen Language School in Benha at Quliobeya Governorate, enrolled in the academic year (2020-2021). Two intact classes were selected for participating in the study; class 5/A (n=25) served as the experimental group and class 5/B (n=25) served as the control group.

Procedures of the study:

After the participants in the research have been selected, The participants of the study were divided into two groups, the experimental group (N=25) and the control group (N=25). The pre writing test was administered to the participants before the treatment. Then, the experimental group was taught using lexical density and lexical diversity while the control group was taught using the traditional method. Then the post writing test was administered to both groups. Results of the study revealed that the program using lexical density and lexical diversity was effective in developing writing quality and quantity among the primary school pupils.

Findings of the study:

The results of the research will be presented in the light of following hypotheses:

1-Findings of the first hypothesis:

The first hypothesis states that " There are no statistically significant differences between the mean scores of the experimental group and the control group in the writing quality in the pre test".

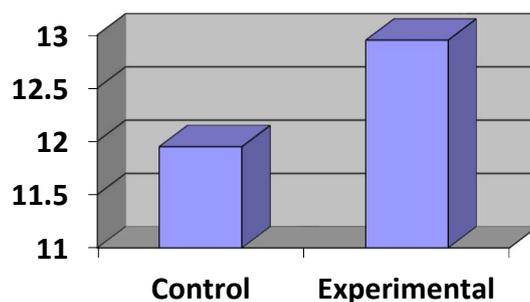
In order to verify the validity of the hypothesis, the t. test for paired sample was used. The following table shows this:

Table (1) T.Value between the mean scores of the experimental group and the control group in the writing quality pre test

Group	No.	Mean	Std. Deviation	t- value	Level of Sig.
Control	25	11.95	2.3	0. 97	Not Significant
Experimental	25	12.95	1.3		

It is clear from table (1) above that there are no significant differences between the mean scores of the control group and the experimental group in the writing quality in the pre-application of the test and the program of the study. The following figure shows this:

Figure (1) : The mean scores of the experimental group and the control group in writing quality pre test



1- Findings of the second hypothesis:

The second hypothesis states that " There are no statistically significant differences between the mean scores of the experimental group and the control group in the writing quantity in the pre test".

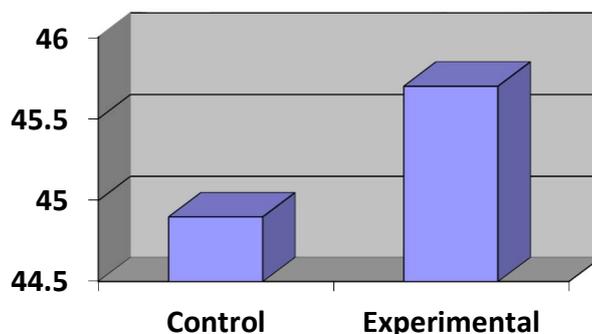
In order to verify the validity of the hypothesis, the t. test for paired sample was used. The following table shows this:

Table (2) T.Value between the mean scores of the experimental group and the control group in the writing quantity pre test

Group	No.	Mean	Std. Deviation	t- value	Level of Sig.
Control	25	44.9	7.6	0.30	Not Significant
Experimental	25	45.7	8.2		

It is clear from table (2) above that there are no significant differences between the mean scores of the control group and the experimental group in the writing quantity in the pre-application of the test and the program of the study. The following figure shows this:

Figure (2) : The mean scores of the experimental group and the control group in writing quantity pre test



2- Findings of the third hypothesis:

The third hypothesis states that " There are statistically significant differences between the mean scores of the experimental group and the control group in the writing quality in the post test".

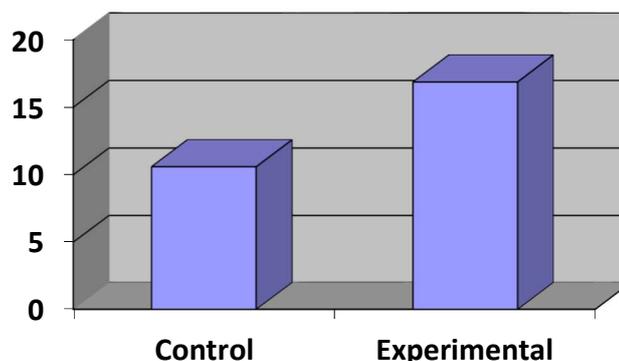
In order to verify the validity of the hypothesis, the t. test for paired sample was used. The following table shows this:

Table (3) T.Value between the mean scores of the experimental group and the control group in the writing quality post test

Group	No.	Mean	Std. Deviation	t- value	Level of Sig.
Control	25	10.6	3.3	8.8	0.001
Experimental	25	16.88	1.4		

It is clear from table (3) above that there are significant differences between the mean scores of the control group and the experimental group in the writing quality in the post-application of the test and the program of the study. The difference is in favor of the experimental group. The level of significance is 0.001. The significance is due to the program intervention. The following figure shows this:

Figure (3) : The mean scores of the experimental group and the control group in writing quality post test



3- Findings of the third hypothesis:

The fourth hypothesis states that " There are statistically significant differences between the mean scores of the experimental group and the control group in the writing quantity in the post test ".

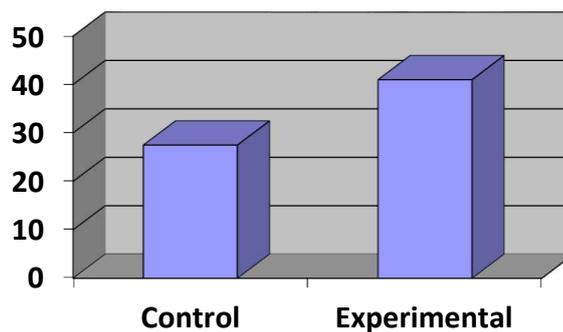
In order to verify the validity of the hypothesis, the t. test for paired sample was used. The following table shows this:

Table (4) T.Value between the mean scores of the experimental group and the control group in the writing quantity post test

Group	No.	Mean	Std. Deviation	t- value	Level of Sig.
Control	25	27.50	5.92	5.721	0.01
Experimental	25	41.00	8.71		

It is clear from table (4) above that there are significant differences between the mean scores of the control group and the experimental group in the writing quantity in the post-application of the test and the program of the study. The difference is in favor of the experimental group. The following figure shows this:

Figure (4) : The mean scores of the experimental group and the control group in writing quantity post test



4- Findings of the third hypothesis:

The fifth hypothesis states that " There are statistically significant differences between the mean scores of the experimental group and the control group in overall writing modes in the post test."

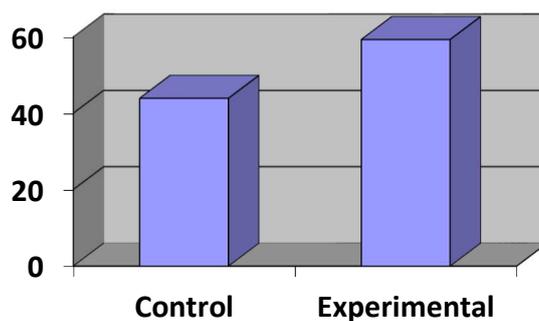
In order to verify the validity of the hypothesis, the t. test was used. The following table shows this:

Table (5) T.Value between the mean scores of the experimental group and the control group in overall writing modes in the post test

Group	No.	Mean	Std. Deviation	t- value	Level of Sig.
Control	25	43.9	7.1	8.501	0.001
Experimental	25	59.3	5.9		

It is clear from table (5) above that there are significant differences between the mean scores of the control group and the experimental group in the overall writing modes skills in the post test. The difference is in favor of the experimental group. The following figure shows this:

Figure (5) : The mean scores of the experimental group and the control group in writing quantity post test



The qualitative analysis of the results:

In analyzing the different writing aspects written by pupils in the control group and the experimental group in the pre test, it appears that:

- The pupils didn't have enough background about the different forms of writing and the tasks related to each form. This was reflected in the writing. This writing was rather simple and fragmented before the start of the program.
- Concerning the demands of writing quality, the first demand which indicates content/organization or establishing the controlling ideas through examples, illustrations and details was completely absent in the pupils writing in the pre test. The pupils didn't give logical transition and flow of ideas. The main idea and supporting details were not clear in their writing.
- The second demand which indicates audiences and purposes as the main components and factors which work together to make up the content for a piece of writing are not clear in the pupils pre writing test.
- The third demand includes sentence formation and cohesive devices words in the text function to establish coherence was completely absent in the pre testing.
- The fourth demand includes the pupils use of standard American English pronouns references, correct subject-verb agreement, standard forms of verbs, pronouns and correct word choice. The pupils writing in their domain was acceptable to a moderate degree in the pre testing and post ones.
- The fifth demand includes the mechanics of writing_ appropriate capitalization, appropriate internal punctuation, appropriate format and correct English spelling were not clear in the pre testing comparing with the post ones.

Discussion of the results:

Based on the qualitative and quantitative analysis of the previous results, it is clear that:

- The pupils' performance in the post test in writing quality was not significant than their performance in the pre test. This may be due to the fact that the program focused on the diversity of writing tasks and density of these tasks which included tasks of different difficulties levels. This result is consistent with (Zhai and Gao, 2018).
- The improvement of the pupils' performance may also be due to the differences in the writing tasks difficulties which reflect variation in the ways the pupils think and compose when engaged in different kinds of

writing tasks. The pupils used different cognitive schema depending on the writing tasks. This result is consistent with (Zhai and Gao, 2018).

- Differences in the assessed quality of the pupils' writing and writing tasks difficulty may be due to the interactive effect between writing response elicited by the writing tasks and expectations of the reader. This result is consistent with (Trenz, 2007).

- The improvement of the pupils writing quality in the post application may be due to the extensive practice and diversity of the writing tasks which enabled the pupils to manage the simultaneous constraints of planning, generating texts, reviewing and revising already written part. This result is consistent with (Voorhees, 2019).

- The pupils improvement in writing quantity is clear and significant in the pre_application comparing with the post one. This can be attributed to the fact that exposing the pupils to variety of activities and giving them a background about knowledge transfer. The case which gave the pupils the opportunity to approach all these tasks and activities in flexible use through support from the teacher which increased transfer to different topics and context and improved the quantity and quality of writing. This result is consistent with (Taguchi, 2007).

- After exposing the pupils to a variety of writing topics, tasks and activities, the pupils were able to generate, organize their ideas and conceptualize the writing as a whole. This result is consistent with (Litt and Nation, 2014).

- The pupils improvement in writing quality and quantity are also attributed to the fact that the activities and tasks were presented through different information load level_ "diversity and density" which means that information presented were moderate and at the levels of the pupils' knowledge. The topics presented for writing were diversified and of a moderate density. The case which helped the pupils to produce a good piece of writing in the post treatment.

Suggestions and recommendations of the study:

In the light of the previous analysis and results, it may be concluded that:

- The findings suggest using the explicit and heuristic approach in teaching writing for the beginners.

- The study also suggest combining the text diversity and density in improving the pupils thinking styles and engagement in different modes of writing.

- **More researches are needed to address the aspects of difficulty in writing for the beginners.**
- **Further research is needed on what types of writing are actually being taught in schools as well as the potential unintended effects on writing quality that may be relate to "teaching to the test".**
- **Further researches are needed to study the influence of cognitive demands required by different writing tasks on the essential quality of the pupils' writing.**
- **Teacher should help pupils to be engaged in various types of writing through equal practice across writing tasks.**
- **Pupils should be trained on the demands of mental tasks as a key of sentence comprehension, problem solving and complex cognitive problems which often help them to use information in different aspects of writing.**
- **There must be extensive training on the text variety and complexity to help pupils coordinate and integrate stored information with organizing process of learning writing.**

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Abstract

The purpose of this study was to investigate the effectiveness of applying lexical density and lexical diversity for developing writing quality and quantity among primary school pupils. The participants were fifty pupils in the fifth year from El-Shobban Al-Muslimeen Language School in Benha at Quliobeya Governorate. The participants of the study were divided into two groups, the experimental group (N=25) and the control group (N=25). The pre writing skills test was administered to the participants before the treatment. Then, the experimental group was taught using lexical density and lexical diversity while the control group was taught using the regular method. Then the post writing quality and quantity test was administered to both groups. Results of the study revealed that the program using lexical density and lexical diversity was effective in developing writing quality and quantity among the primary school pupils.

Key words:lexical density, lexical diversity, writing quality and quantity

ملخص الدراسة:

هدفت الدراسة الحالية لتحديد فاعلية تطبيق الكثافة المعجمية والتنوع المعجمي لتنمية جودة ومقدار الكتابة في اللغة الإنجليزية لدى تلاميذ المرحلة الابتدائية. تكونت عينة الدراسة من ٥٠ طالباً بمدرسة الشبان المسلمين للغات ببنها بمحافظة القليوبية. تم تقسيم العينة إلى مجموعة تجريبية وعددها ٢٥ طالباً ومجموعة ضابطة وعددها ٢٥ طالباً. استخدمت الدراسة الحالية الأدوات الآتية: شكلان متكافئان من اختبار جودة ومقدار الكتابة في اللغة الإنجليزية (من إعداد الباحثة) , وأداة لتصحيحه. تم تطبيق اختبار جودة ومقدار الكتابة في اللغة الإنجليزية قبل وبعد تطبيق الكثافة المعجمية والتنوع المعجمي. أظهرت نتائج الدراسة فاعلية تطبيق الكثافة المعجمية والتنوع المعجمي المقترح لتنمية جودة ومقدار الكتابة في اللغة الإنجليزية لدى تلاميذ المرحلة الابتدائية ، حيث أن نتائج المجموعة التجريبية كانت أفضل من نتائج المجموعة الضابطة في جودة ومقدار الكتابة في اللغة الإنجليزية.

الكلمات المفتاحية: الكثافة المعجمية ، التنوع المعجمي ، جودة ومقدار الكتابة