English Reading and Writing as An Interconnected Skill in Industrial Revolution 4.0 Era: Conceptual Developments and Implications to Its Pedagogy

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Abstract*: Previous studies have demonstrated the significance of Industrial Revolution (IR) 4.0 in advancing the educational reform including in English as a foreign language (EFL) teaching and learning context. The reason is that English language remains the global lingua franca in which the top ten skills pronounced by World Economic Forum in 2016 can be achieved by good command of English. Hence, the attention devoted to the quality of students' EFL literacy in this IR 4.0 era is more increasing than ever. Nevertheless, the issue is merely focused on the pedagogical interventions to elevate the students' new literacies like the formulation and implementation of Education 4.0. This study aims to demystify the changing orientation of perceiving reading and writing as an interconnected skill or literacy in EFL context. The review process started from collecting relevant previous studies. Afterward, a careful reading was performed followed by synthesizing process. The findings encompass three main points: (1) the redefinition of English reading-writing connection in Industrial Revolution 4.0 era; (2) the learning resources to maximize the students' English reading-writing competences; and (3) the implications of the changing orientations to the pedagogical practices. Recommendations for future research are also presented*

Keywords*: reading, writing, industrial revolution 4.0, education 4.0*

INTRODUCTION

There are several researches and articles or journals found about the methodology of reading and writing teaching. But, there is still being a questionable research to know their connections. To know more about the connection, we could comprehend the periodization of reading and writing made by Musthafa in 1996; the 1960s refers to behavioral field, 1970s-1980s is known as cognitive model of learning, latter part of 1980s-early part of 1990s works with transactional theory 'transaction' (Musthafa, 1996).

The purpose of making this paper is to find whether reading and writing connections are seen as interdisciplinary collaborative findings in

the era of industrial revolution 4.0? To examine the reading and writing connections as interdisciplinary collaborative findings, we need to see more about the literature of reading and writing. Therefore, we could know what are their connections and do depth research for seeing their collaborativeness.

Smith (2009) also presents natural literacy that develops dependently on the children's experiences through reading and writing activities. Reading-writing activities are essential to the child's learning to read and write. Reading and writing should occur naturally to construct meaning in everyday situations (Miller, 1982; Wilson, 1981 in Smith 2009). Reading and writing are interdependent processes that are essential to each other and mutually beneficial (Holt & Vacca, 1984 in Smith 2009). As writing improves through daily communicative use, reading is enhanced (Goodman & Goodman, 1983 in Smith 2009). The relationship between reading and writing is based on communication. Both processes should develop as a natural extension of the child's need to communicate (Wilson, 1981 in Smith 2009).

In other words, if reading and writing are to be communicative, the reader knows the meaning of the writer and the writers understand what he need of the reader. Thus, every student should be able to identify and classify the genre of the text using their knowledge and experience for different purposes. This study contributes to the use of reading and writing connections to increase the students' competences.

THEORETICAL FRAMEWORK

Reading is a useful activity for language acquisition (Harmer, 2007). While the learners read more, they get better. They get much newer knowledge's through reading activity not only the meaning of the text but also the sentence structure. Students understand their reading when they are able to recognize the text structure (Musthafa, 2003).

Reading is divided into two parts: intensive and extensive readings (Harmer, 2007). Extensive reading means that the readers take the text freely. They do reading for joyful activities. Then, the extensive reading seems as academic activity. The reading activity grows the same as the world development. We expand the way of reading by using the electronic communications and the internet since those technology tools help to study languages, especially English. Reading also provides materials for writing. Reading gives the learners opportunity to know more the new vocabularies, sentence structures, and punctuation. Therefore, they could construct the text as the impact of what they have read. Inquiry activities; process writing approach; study of models; and writing for content learning.

In the first period, the learners do only as receivers, they are relatively passive (Weaver, 1988 in Musthafa, 1996). They imitate only their teacher as a model of learning. Of course, they learn visually on the teacher. They do not have independent thoughts, feelings or their own

perceptions. The teacher is not being a facilitator, but being a single decision maker in the classroom. The effect of this reading and writing methodology is that learners work only by the teacher's direction. This causes the learners passive in a classroom activity.

The next decade is the cognitive model of learning that provides interrelationship between reading and writing. Many research in this era stated that there are similarities between the process of reading and the process of writing to construct the meanings (Musthafa, 2003). The learners use their personal ideas/ experiences to find out the meanings of the text. The last period is 1980s till 1990s that proposed a perspective in which reading is not one-way process, but a two-way transaction between the mind of the reader and the language of the text (Musthafa, 1996). What they write is what they get after reading. It comes from the content and the structure of the author's message and the experience of the reader (Rosenblatt, 1988 in Musthafa, 1996). The researcher in this decade found that there is a connection between reading and writing although sometimes both theory and practice of the reading and writing do not have connection. It is caused they are taught in different class by different teachers (Smith, 2009).

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Reading and writing is part of literacy. Literacy concerns with the ability to read and write that is called autonomous literacy approach. Then, in modern usage, word means reading and writing used for written communication (Street, 1984 in Randall, 2008). Reading and writing connect each other in communication way. Reading could be used as a way for structuring writing. If we read much, we have enough materials to create our own text. While making text, we often mistaken to choose appropriate vocabularies and to arrange several sentences.

To help the learners' writing practices, we could use three issues; genre, the writing process, and building the writing habit. Genre analysis guides them to find the typical of the text and to create their own text (Harmer, 2007). The writing process consists of planning, drafting, reviewing, and editing till producing a good product of writing. To build the writing habit, we need to engage the learners with easy and joyful activity and involve them into reading activity with enthusiasm. Hyland (2008) proposes two approaches to identify the writing activity.

First, a text-oriented approaches consider writing as an outcome, viewing writing as the words on a page or screen. Here we see text either as object or as discourse. Seeing texts as objects means understanding writing as th application of rules. texts as discourse means that texts contain language using in communication to achieve purposes in a certain situation (Hyland, 2008). Second, a reader-oriented view of writing emphasizes the interaction between writers and readers: The process of writing involves creating a text that the writer assumes the readers recognize and expect that. Writing which doesn't see it as just words on a page or the activity of isolated individuals creating personal meanings. It is always a social practice, influenced by cultural and situational contexts. Francine Prose, who noted in her book, "Reading Like a Writer" (2006 in Smith, 2009), aspires writers learn to write by practice, hard work, by repeated trial and error, success and failure, and from the books we admire. Their ideas show that there is connection between reading and writing.

We also have different view of interdisciplinary of reading and writing based on Smith (2009) research. There are the reading next report that identifies the following eight instructional elements in promoting effective adolescent literacy programs: direct, explicit comprehension instruction; effective instructional principals embedded in content; motivation and self-directed learning; strategic tutoring; diverse texts; intensive writing; a technology component; and ongoing formative assessment of students and the writing next report that identifies eleven elements: writing strategies; summarization; collaborative writing; specific product goals; word processing; sentence-combining; prewriting; inquiry activities; process writing approach; study of models; and writing for content learning.

Smith (2009) also presents natural literacy that develops dependently on the children's experiences through reading and writing activities. Reading-writing activities are essential to the child's learning to read and write. Reading and writing should occur naturally to construct meaning in everyday situations. (Miller, 1982; Wilson, 1981 in Smith 2009). Reading and writing are interdependent processes that are essential to each other and mutually beneficial (Holt & Vacca, 1984 in Smith 2009). As writing improves through daily communicative use, reading is enhanced (Goodman & Goodman, 1983 in Smith 2009). The relationship between reading and writing is based on communication. Both processes should develop as a natural extension of the child's need to communicate (Wilson, 1981 in Smith 2009). In other words, if reading and writing are to be communicative, the readers know the meaning of the writer and the writers understand what the readers need.

METHOD

The study applies the grounded theory that is one of qualitative descriptive research. The researcher analyses the topic comparing some

theories. Therefore, she could redefine the reading-and writing connection in their implication and pedagogical to teaching practices.

FINDINGS AND DISCUSSION

Redefining English Reading-Writing Connection In Industrial Revolution 4.0 Era

The definition of English reading and writing skills as an interconnected literacy keeps advancing in accordance with the development of technology. Industrial revolution 4.0 era has increasingly altered the way reading and writing skills was perceived before. Those skills are no longer considered as a monotonous learning process to make meaning through textual printed media like printed newspapers, printed textbooks, and so on. The students of English as a foreign language are required to be able to make meaning through the ubiquitous digital resources such as online newspapers, interactive audio-visual media, and interactive PDF books, to mention a few. They need the ability to operate the electronic devices to learn something.

Following the demands of IR 4.0 era, the urgency to possess digital literacy skills seems more definitive than ever. It is because digital literacy skills are associated with the top ten skills in 2020 later. They are complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, and cognitive flexibility (World Economic Forum, 2016). Sadiyoko (2017) also asserted that the learning orientation still emphasizes student-centered approach, but mediated by digital learning resources due to the advancement of information and communication technology (ICT). It implies that the ultimate goal is to be autonomous and active learners.

The goal is highly associated with the capacity to activate critical thinking, creativity, and critical engagement in the learning process. In the context of EFL learning, the students do not only receive the information through digital resources but also criticize the obtained information to make meaning or to learn something. In other words, the top ten skills mentioned before are intertwined with the main goal of education 4.0; that is learning autonomy.

The activation and development of critical thinking, creativity, and critical engagement in the learning process cannot be achieved maximally without the good understanding of reading-writing connection in this Industrial Revolution 4.0 era. Reading as the receptive skill allows the students to obtain relevant information and digest it to reach a conclusion as the new knowledge. The new knowledge is then tested by doing writing activities to measure the extent to which the students comprehend what they have learnt before. With the advancement of technology, the students are demanded to apply both skills to comprehend activities related to digitation such as instructions, operations, guidelines, and interactions as

mentioned by Hariharasudan and Kot (2018). He further clarifies that the demands to understand digitalized instructions, operations, and interactions cannot be separated from the development of digital English. The emergence of applications driven by Internet of Things and automations gives impact to the shift of focus from reading and writing activities as a sequenced literacy to reading and writing as an integrated and interconnected literacy. For example, when the students want to learn English from interactive websites, they need to read and process the information exposed in the website and at the same time they write down the information they want to focus on. This process is cyclical until they get the meaning of their learning process.

The integration of reading and writing skills as well as digital mastery as multiliteracies (Cervetti, Damico, & Pearson, 2007; Puteh-Behak & Ismail, 2018). The scholars argued that multiliteracies include the ability to process the information from multiple resources (printed, visual, and digital) through the integrated reading and writing activities. Those activities cannot be maintained well and beneficial for the students' self-development without certain level of knowledge of operating and managing the digital tools. Leu et al. (2004), therefore, advised that the students' critical thinking, problem-solving skills, creativity, and critical engagement manifested through analyzing and synthesizing the obtain information need to be fostered. The students are expected to possess those skills; in other words the 4Cs – critical thinking, communication, collaboration, and creativity – in order to maximize the use of digital tools in mediating the development of reading and writing skills.

The Learning Resources To Maximize The English Reading-Writing Competences In Ir 4.0

It is then important to understand the learning resources that fosters the maximum level of reading-writing connection as an integrated literacy in this 21st century. Plakans (2009) advocated that since both skills are integrated, not sequenced, the impact is also cyclical. When the students do reading activities to improve reading comprehension, their writing can be developed and vice versa. The co-influence of both skills has been researched since 1980s (Kennedy, 1985; Spivey & King, 1989).

Such a co-influence of both skills is possibly emerged due to its close relationship in which there are at least four types of knowledge commonly shared by readers and writers, according to Fitzgerald and Shanahan (2000, pp. 40-42) in Cho and Brutt-Griffler (2015). Meta-knowledge is the first type related to the functions and objectives of the reading and writing activities. The second type is domain knowledge associated with background knowledge of the readers and writers about the content and substance. Third, readers and writers similarly acquire knowledge about universal attributes such as writing system, grammar, and sentence structure. Procedural knowledge is the last but not least shared knowledge because readers and writers arrange the activities in a

somewhat similar flow including questioning, recalling, and finding analogies.

Regarding the learning resources to activate the best potentials of the co-influence of reading and writing skills in this digital era, Zheng and Warschauer (2012) conducted a study on the impact of digital learning process on the students' reading-writing development. The findings demonstrated that live weekly blogging and reading aloud from the teacher triggers the students to respond to the content online through giving comments. It is even better when the teacher joins in the online discussion by probing in-depth questions. In the following year, Warschauer and Zheng (2013) conducted another study to examine the influence of digital learning process by using laptop computers on the students' literacy learning. The findings showed that digital learning across culturally and linguistically diverse schools can mediate the students' development on writing skills because the students have the opportunity to do the writing process with the computers especially through Google docs, which is collaborative and interactive.

Then, the learning resources require careful consideration of the supporting texts to realize the expected learning atmosphere. Anderson-Inman and Horney (2007) proposed a typology consisting of eleven types of resources. Presentational learning resources emphasize the combination of texts and graphics that can be customized. Navigational learning resources include tools allowing the readers to explore contents across documents. Translational learning resources are the contextualized and more accessible version of a document presented in either the same or different mode. Explanatory learning resources consist of relevant information regarding the focused lessons. Illustrative learning resources underscore the visual representation of certain parts of the text. Summarizing learning resources are the condensed version of the original document. Enrichment learning resources provide additional materials for the sake of the readers' comprehensive understanding. Instructional learning resources are used for teaching purposes, which include strategies and guideline to transfer the knowledge. Notational learning resources comprise tools to take notes. Collaborative learning resources allow the readers to work together to make meaning. Evaluational learning resources are used to assess the progress or development of certain objectives.

Implications To The Pedagogy Of English Reading And Writing Through Education 4.0

The redefinition of English reading and writing skills in this industrial revolution 4.0 era as well as the specific demands of the activities through a wide range of the learning resources indicates that there must be implications to its pedagogy. One notable shift is the attention devoted to the implementation of Education 4.0. The significance of embracing Education 4.0 is also articulated by previous recent study (Hariharasudan

& Kot, 2018). Such a learning framework is designed to promote 21st-century life skills including the 4Cs, cross-cultural understanding, and information and media literacy (Puncreobutr 2016).

Sadiyoko (2017) further asserted that at least nine characteristics must be fulfilled in order to activate the concept of Education 4.0. In this paper, the characteristics have been suited with the focus of the present review; that is English reading and writing. First, the teaching and learning process should be able to break the place and time limitations. Second, students' needs analysis must be conducted prior to the implementation of the teaching and learning process. Hence, the learning flexibility must be the priority as the third principle. It also gives an impact to the shift of roles and status of the teachers and students. Both learning stakeholders can be considered peers and mentors as the fourth principle. Fifth, the learning process provides information, which triggers critical questions. Sixth, the way to assess the learning outcomes is through the opportunity to have practical application. Project-based learning is also emphasized. Therefore, students' learning autonomy and active engagement will be the heart of the learning process as the eighth principle. This process indirectly promotes careful evaluation as the ninth principle.

Digital learning is believed to be able to cater for the students' multiliteracies in this more globalized era (Daud et al. 2015). Although it is still considered challenging to implement digital learning driven by the concept of multiliteracies (e.g., Puteh-Behak, Darmi & Mohamed, 2015 in Malaysian learning context; Tan & Guo, 2010 in Singaporean learning context), the benefits have also been pronounced. One of the frequently focused techniques driven by digital learning is the use of YouTube. It is one of the products of Web 2.0 enabling the users to interactively, collaboratively, and critically manage their learning resources. The opportunity of getting the best of reading-writing connection is through the activities offered by such a multimodal platform. The users can search for, compile, and determine the learning resources in the forms of videos and at the same time can give comments on the videos and have a sharing or dialogues with other users or with the video owner. Some of the notable benefits from the previous studies comprise the development of four skills of English, vocabulary, and grammar and the development of some clinical characters such as motivation, autonomy, creativity, critical thinking, professionalism, and teamwork (Husna, Purnawarman, Suherdi, Lubis, in Press). Some other techniques encompass the use of Edmodo (Purnawarman, Susilawati, & Sundayana, 2018) and Padlet.

CONCLUSION

This review paper has delineated some points regarding the developments of reading-writing connection in this Industrial Revolution 4.0 era as well as its implications to the instructional framework. The synthesis results from the previous studies reveal that English reading and writing skills as an interconnected literacy must be redefined in

accordance with the demands of IR 4.0. Consequently, the activities should also involve the concepts of multimodality and multiliteracies. Digital learning is believed to be one of the contributing ways to maximize the 21st-century learning of reading and writing skills. As a continuation of this review paper, future research needs to testify to what extent digital learning approach can cater for the students' needs and world's demands.

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