

The role of online written communication channels for reading-writing connection*

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Kim, Sun-Young and Jiwon Paek. 2019. The role of online written communication channels for reading-writing connection. *Linguistic Research* 36(Special Edition), 81-105. This study developed an empirical model that could test reading-writing connection theory by examining the mediating role of online written communication channels. A set of hypotheses, drawn on a socio-cognitive theory of reading-writing connection, was developed to examine how reading-writing practices influenced literacy development through online written communication. Factor analysis was conducted to examine empirical relationships among the theoretical variables obtained from survey data. The results showed a significant role of online written communication in reinforcing the relationship between literacy practices and development. First, the individual and social practices of reading and writing had little impact on the development in both areas. Second, online written communication channels had a significant interaction effect on reading-writing practices both at the individual and social dimensions. Third, online written communication channels, such as SNS-based interaction using mobile devices, served as the mediating variable that empowered the relationship between reading-writing practices and development. The empirical results suggest that, to encourage L2 students toward a more integrative continuum of reading-writing practices, practitioners should incorporate online written communication channel into teaching practices. (Mokpo National University · Daegu University)

Keywords reading-writing practice, online written communication channels, socio-cognitive theory of reading-writing connection, literacy development

1. Introduction

Research on the reading-writing connection has led to the recognition of the inseparable connection between reading and writing as linguistic areas which need to be taught together (Grabe 2003; Grabe and Zhang 2013; Hirvela 2004;

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Hudson 2007; Plakans, 2009; Ruddell 2005). Emphasizing the interdependence of reading and writing abilities, many prior studies on the reading-writing (hereafter R-W) connection (Ackerman 1989; Grabe 2003; Grabe and Zhang 2013; Lightbown, Halter, White, and Horst 2002; Prowse 2003; Tsai 2006; Tuan 2012) argue that the integration of both skills provides great potential for learning. For example, learners can improve their writing abilities by examining what they read. Despite such a supporting evidence, many traditional L2 English classes tended to be skewed to reading relative to writing or to writing relative to reading, thus constraining an opportunity to enhance R-W development at the same time.

From a socio-cognitive perspective of the R-W connection, teaching practices integrating reading and writing in L2 classes provide great learning potential since reading and writing serve as an essential part of each other (Carson and Leki 1993; Flower 1994; Grabe 2003; Hirvela 2004; Nelson 1993; Plakans 2008, 2009; Qian 2002; Ruddell and Wiley 2005). More significantly, the inextricable link between R-W practices and development is embedded in the cognitive and social interaction of reading and writing. Under this theoretical orientation, the individual dimension emphasizes cognitive interaction between a learner and the given text, which is often shaped by the sets of rules and conventions. The social dimension of the R-W connection views R-W development as a process of negotiating meanings through interpersonal interaction, providing a specific way in which reading and writing are conveyed in social settings. Accordingly, R-W practices L2 learners engage in tend to be reproduced through their L2 learning experiences as individuals and as social participants in a learning community (Horowitz 1986; Kamhi-Stein 2003). In this respect, the R-W theory highlights the inseparable connection between R-W practices and development occurring through the individual and social dimensions of interaction (Grabe 2001, 2003; Hirvela 2004).

Although the R-W theory provides consistent implications that integrated instruction can help learners enhance both reading and writing abilities, many L2 researchers have argued that such impacts are not likely to occur in a traditional EFL classroom. As Hirvela (2004) addressed, EFL classrooms, skewed to teaching of one skill over the other, tend to constrain interactional opportunities available to learners at both the individual and social dimensions, raising the issue of how

to create interpersonal dynamics in traditional classrooms.

However, due to technology innovation, many EFL teachers have incorporated various types of online learning platforms into classrooms. The development of an e-learning environment, such as social networking sites or mobile communication devices, provides a social place to communicate with others while engaging in various types of R-W practices (Breslow, Pritchard, DeBoer, Stump, Ho, and Seaton 2013; Golonka, Bowles, Frank, Richardson, and Freynik 2014). The existing body of studies provides evidence supporting the mediating role of online written communication channels in the socio-cognitive theory of R-W connection (Breslow, et al. 2013; Golonka, et al. 2014; Shee and Wang 2008; Sung and Yeh 2012). Sung and Yeh (2012) pointed out the important role of online written communication channels as a method providing an informal environment for foreign language learning. In a similar context, Kim (2012a) showed that an online written communication channel could serve as a communication platform broadening the individual and social dimension of interaction especially in EFL R-W classes.

In an attempt to investigate the theoretical link between the R-W practices and development in an EFL context, this study develops an empirical model that can test the mediating role of an online written communication channel in the model. In the conceptual model, the two dimensions of R-W practices, or individual and social practices, are included as two independent variables, and the R-W development as the dependent variable. On the other hand, the online written communication channel is used as a moderating variable in the model. In addition, this study develops a set of hypotheses, drawn from the conceptual model, to test empirical relationship among the variables through a factor analysis. The results are expected to provide pedagogical implications applicable to EFL reading-to-write classrooms.

2. Theoretical backgrounds

2.1 Theoretical perspectives on the reading-writing connection

A consistent implication for the theory of the reading-writing connection is

that reading and writing should be taught together because both disciplines share many common processes (Grabe 2003; Hirvela 2004; Kim 2014, 2017a, 2017b). According to this theory, the specific way to practice reading in connection to writing, shaped by a particular culture of learning and personal experiences, influences the growth trajectory for reading and writing. The key elements of the R-W connection theory are closely related to the individual and social dimensions of interactions. More specifically, during the learning process, L2 learners interact with the text at the individual level while also in a social context. Accordingly, the quality of interaction is viewed as an essential part of R-W development in that the extent to which L2 learners interact is linked to literacy development. In this respect, an attempt to provide interactional opportunities can help to reinforce theoretical relationships in EFL classes, stressing the critical role of online written communication for the R-W connection. The inter-relationships among constructs underlying the socio-cognitive theory of the R-W connection are conceptualized in Figure 1 (Kim 2014, 2017b).

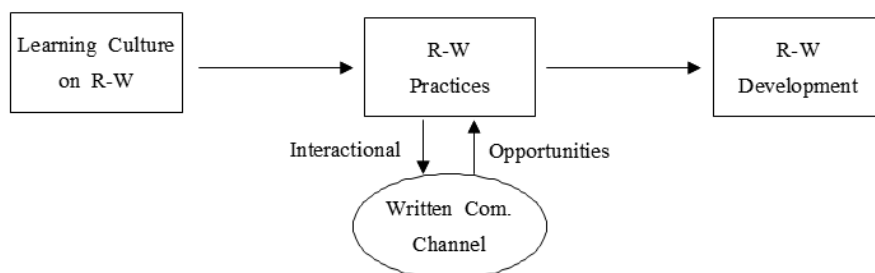


Figure 1. A theoretical perspective on reading-writing connection

2.2 Reading-writing practices

The Individual Dimension of R-W Practices

A socio-cognitive approach to R-W connection views R-W connection as an interaction of individual and social processes through which L2 learners establish the link between R-W practices and development (Leki 2007; Long and Higgins

2002; Plakans 2009; Tardy 2005). An individual dimension of R-W practices emphasizes the cognitive interaction between a learner and the text, thus viewing R-W practices as a means for 'information processing.' Prior studies on the individual dimension are relevant for reading-to-write classrooms in that they pay attention to how L2 learners used reading sources in their writing (Bloch 2008; Leki 2007; Spivey 1997; Tardy 2005, 2009; Qin 2009; Zhu 2005). The results of these studies showed that the teaching practices of combining reading and writing in classes helped learners to enhance reading and writing skills, but persistent individual differences were considered as a challenge to overcome.

With the cognitive approach, a strand of research investigated whether language proficiency could be a variable to explain the individual differences in R-W practices (Ferris 2009; Grabe 2003; Grabe and Zhang 2013; Kennedy 1985; Lee 2005; Olson 2005; Spivey 1991, 1997). Olson (2005) found that students tended to use similar cognitive strategies while composing in a reading-to-write class. This illustrates the importance of L2 proficiency in R-W practices by showing that practitioners could teach what the proficient learners did to the less proficient learners. However, this study failed to explain persistent individual differences, implying that a lack of social interaction might constrain interactional opportunities available to his learners.

Similarly, Kennedy (1985) and Spivey (1991, 1997) showed that L2 proficiency can be a variable to explain the R-W practices which learners engage in. Specifically, while composing text from multiple sources, patterns of engaging in R-W practices by proficient learners were clearly different from did less proficient learners in terms of three sub-processes: selecting the content, organizing the compositions, and integrating ideas in their own writings. Like many other studies in this field, these studies provided teaching implications applicable to less proficient learners but did not answer why literacy development tends to be skewed towards either skill (reading or writing).

Kim's (2012a, 2012b, 2014) studies helped to explain such limitations by showing why individual differences might be misleading. Under the cognitive perspective, learner differences in literacy practices are understood due to individuals' different stages of the cognitive process and learners in the same proficiency level share the similar patterns of R-W practices. However, as Kim (2014) argues, ways of engaging in R-W practices differ widely even in a group

of learners with the same proficiency. In this respect, R-W practices should comprise not only the individual dimension, but the social dimension of the practices.

The Social Dimension of Reading-Writing Practices

Another element of the socio-cognitive theory of the R-W connection is the social dimension of the practices, viewing R-W practices as a shared discourse feature shaped in a social context (Bizzell 1992; Brandt 2001; Deans 2000; Gee 2010; Wallace 2006). Learners should be acculturated in a certain community of learning to participate as a competent member, which is illustrated by Smith's (1987) 'literacy club.' The factors that consist of a social dimension of R-W practices are as follows: schooling, values, attitudes, or culture of learning in a community. In addition, since a social aspect of R-W practices emphasizes the interaction between the individual and social dimensions of literacy, R-W development is a sort of learning process that needs to be acquired by engaging in various types of social activities in classes.

Many researchers, looking at the social aspect of the R-W connection, have evidenced supporting the social influence on R-W practices (Hirvela 2004; Kamhi-Stein 2003; Kim 2014, 2017; Leki and Carson 1997; Silva 1993; Tsai 2006). Tsai (2006) showed that practicing reading in connection to writing through classroom activities could help learners develop reading and writing skills in a coherent way. In a similar way, Hirvela (2004) and Kim (2014) provided results supporting the R-W development by showing that classrooms provided a social place to interact with others in various ways. Through this process, both novice and expert learners were able to negotiate difficulties and individual differences in R-W development.

Another strand of studies done under the quantitative paradigm examined the inter-relationships between reading and writing using correlational analysis (Beck and McKeown 1998; Perin 1998; Shanahan 1997; Tierney and Shanahan 1991). Shanahan (1997) showed that reading and writing abilities were highly correlated with a min-max correlation of 0.50 to 0.70, illustrating moderate overlap with these abilities. This result would be used as evidence that R-W

practices are likely to lead R-W development in the context of L1 learning. However, some empirical studies reported evidence against R-W practices and development. Beck and McKeown (1998) and Perin (1998) conducted similar correlation studies and report little direct evidence that R-W practices enhanced reading and writing development together.

This review of literature illustrates that the relationship between R-W practices and development cannot be generalized across learning contexts. More importantly, learning outcome might differ widely according to the quality of interaction done in classes or to the extent to which learners engage in social activities. As Kim (2014) argues, teachers could empower the relationship between R-W practices and development by incorporating a new communication channel onto teaching practices.

2.3 Online written communication channels

The recognition that reading and writing needs to be taught together for learners' success in academic settings led researchers and practitioners to find a more effective way for the two skills to be connected in a new media age. Thus, they have considered using online contexts such as smart-phones and other mobile internet-accessible devices. Hawisher, Selfe, Moraski, and Pearson (2004) stresses the importance of electronic media in teaching and learning reading and writing because it can create more integrated R-W practices. For example, it allows author to make real time interactions with audience producing texts through the socialization process, and thus having the potential for skill development of both reading and writing (Harl 2003).

Similarly, many empirical studies in L2 learning and teaching (Blake 2009; Payne and Ross 2005; Sanprasert 2009; Tozcu 2008) show evidence of the positive effects of electronic media in that it provides more interactional opportunities and opportunities for feedback with teachers and multiple learners. Meaning negotiation helps learners have increased access to target language input and produce the greatest quantities of output by enabling peers to communicate and collaborate. Therefore, electronic media can play a role in promoting their engagement in their own learning environment and improving their language

learning.

Additionally, some studies (Armstrong and Retterer 2008; Ducate and Lomicka 2005; Thorne and Payne 2005) reported that electronic media helped learners increase their confidence in reading and writing in the target language, which led them to have more opportunities to read and comment on others' writings and also to reflect on their own L2 writing. Sung and Yeh (2012), a qualitative study with Taiwanese university learners examined their perceptions toward e-learning concluding that they were satisfied with the use of electronic media due to its appropriate difficulty level, convenience, and practicality. As a result, having positive perceptions about e-learning, learners in their study improved reading and writing, and had the intention to use online communication more in the future.

Although evidence of the positive aspects of integrating electronic media use for language learning has been documented, there has not been much research examining the relationship between R-W practices and development in EFL context. Specifically, research examining the role of online written communication channels in mediating learners' R-W practices and development are scarce. This study, therefore, will investigate the theoretical links between R-W practices and development in an EFL context using online written communication channels. This research focuses on the role of online written communication channels as a mediator between the R-W practices and literacy development.

3. Research methods

3.1 Hypotheses development

There are few studies examining the mediating role of online written communication from a socio-cognitive perspective on the R-W connection with EFL learners. Thus, if it indicates a means to mediate individual and social practices in a more efficient way, the present study is expected to provide some implications applicable to L2 classrooms. In the spirit of Kim's (2014) theoretical research, this study explores whether the presence of online written communication channel can empower the theoretical relationships among

individual practices, social practices, and R-W development. Specifically, to empirically examine the role of the online written communication channel, the study develops structural model conceptualizing theoretical relationships among the variables. In doing so, this study tests how online written communication channels helps to enhance R-W development by interacting with the two practice variables, which are individual and social practices.

Four hypotheses were developed to test the empirical relations among variables from R-W connection theory (see Figure 2). The conceptual model in Figure 2 explains the inter-relations among the four factors, including online written communication. Specifically, Hypothesis 1 tests the casual relationship between the variables of the individual practices and R-W development, expecting that the R-W practices done in the individual domain would directly influence R-W development. In the model, the two variables are mildly correlated with a correlation coefficient of 0.45. Similarly, Hypotheses 2 tests how the social practices of R-W is related to the dependent variable, R-W development, expecting that the social dimension of R-W practices has a significant and positive impact on R-W development. As expected, the measure of social practices is positively correlated with R-W development ($r=0.6$).

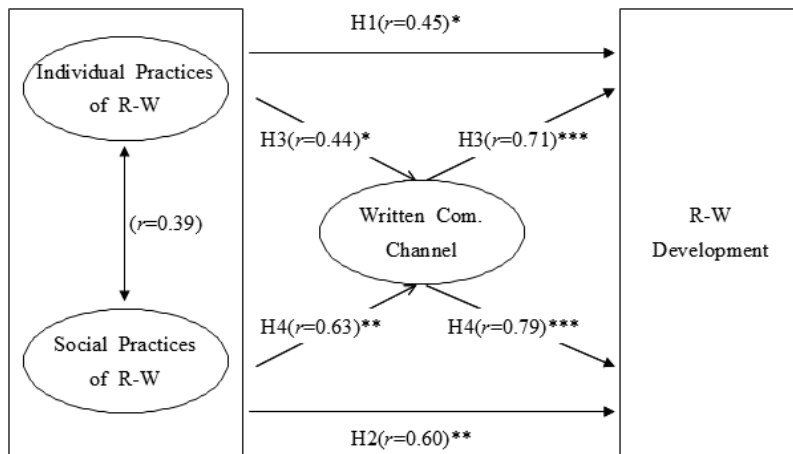
Through Hypotheses 3 and 4, the role of online written communication channel is examined. Hypothesis 3 tests whether individual practices lead to R-W development. It is expected that individual practices have a higher impact on the dependent variable in the presence of online written communication channel. The correlation coefficient for indirect impact with Hypothesis 3 is 0.71, which is higher than that of the direct impact in Hypothesis 1 ($r=0.45$). Finally, Hypothesis 4 tests whether social practices interact with the use of online written communication channels, thus leading to R-W development. It is expected that online written communication channels provide interactional opportunities and thus indirectly helps to enhance reading and writing skills. In Figure 2, the social practice variable is highly correlated with online written communication ($r=0.63$), and online written communication and R-W development are also highly related with a correlation coefficient of 0.79. A set of hypotheses proposed are as follows.

Hypothesis 1: Learners' individual R-W practices will have a significant and positive effect on their R-W development.

Hypothesis 2: Learners' R-W practices including a social dimension will have a significant and positive effect on their R-W development.

Hypothesis 3: Learners' individual practices of R-W will have a significant impact on their R-W development by interacting in online written communication channels.

Hypothesis 4: Learners' social practices of R-W will have a significant impact on their R-W development through an interaction in online written communication channels.



Note: "****" and "****" denote the statistical significance of the correlation coefficient (r) at the 1% and 5% levels, respectively.

Figure 2. Structural model for reading-writing connection theory

3.2 Survey

A survey was developed to collect university students' data on individual and social practices, R-W development, and the use of online written

communication channels, as shown in the appendix. The survey comprises four categories which measured the learners' practices of reading in connection to writing, the use of the online written communication channels, and self-reported R-W development. More specifically, the survey consisted of 20 Likert-type items 5-point scale, with 5 items in each subcategory. The survey items, which were drawn from related literature, are categorized into the four variables, and their operational definitions are presented in Table 1.

Table 1. Definition and measures of the four variables

Factors	Operational Definitions	Literature (items)
Individual Practices	Measuring the extent to which reading and	Kim (2012a, 2017a)
	writing are connected during the cognitive process	Tierney and Shanahan (1991)
Social Practices	Measuring the degree of engaging in R-W practices through social interaction	Hirvela (2001, 2004), Kim (2012a, 2017a)
R-W Develop.	Measuring the development of reading relative to writing.	Kim (2012a)
Online Written Comm. Channel	Measuring the use of online comm. channel as a means for R-W practices	Harandi (2015), Kim (2012b)

The survey was distributed to the participants majoring in English-related disciplines (i.e., English education and English literature) in South Korea. A total of 389 surveys were collected among 400 surveys distributed, and finally the survey analysis was conducted using 351 valid observations with complete responses. The researcher randomly chose five universities in Korea and administrated the survey at the beginning of the fall semester of 2018.

- a) Individual practices: Measuring individual practices reading in connection to writing, which indicates the interdependence of R-W practices done in a cognitive dimension (i.e., 'I am actively engaging in writing before, during, or after reading.').
- b) Social practices: measuring practices of engaging in reading and writing through classroom activities, which indicates the extent to which L2 learners participate in social interaction (i.e., I like to practice in group

activities related to reading and writing.’).

- c) Reading-writing development: measuring the extent to which L2 learners perceive or experience the interdependence of L2 reading and writing processes (i.e., ‘Reading and writing are the same skills you need to develop simultaneously.’).
- d) Online written communication channel: measuring the extent to which L2 learners use online written communication channels (SNS-based channels, e-mail, or bands) during their reading and writing processes (i.e., ‘While interacting with others in online channels, I am able to improve my reading and writing skills.’).

Descriptive statistics for the sample are presented in Table 2, which includes gender, age, and educational background. The students participating in the survey showed a wide range of differences in age and educational experiences. The majority of learners were under 30 (78%). Learners between 30 and 39 were 15.7% of the sample, while learners over 40 were 6.3% of the sample. With regard to educational background, most of the learners had high school experience with 71.5%. However, a significant number of learners had degrees of colleges (16.2%), universities (9.4%), and even graduate school (2.8%) experience. The sample describes learners’ characteristics getting heterogeneous and diversified. Finally, female learners were 57.3% of the sample, showing that gender distribution was somewhat skewed to females.

Table 2. Descriptive statistics for the participants

Sample Characteristics		N	%
Gender	Male	150	42.7
	Female	201	57.3
Age	Under 20	55	15.6
	21-29	220	62.4
	30-39	52	15.7
	Above 40	22	6.3
Previous Education	Secondary (high school)	251	71.5
	College	57	16.2

University	33	9.4
Graduate	10	2.8

To measure the four variables in the sample, 20 items (5 for each variable) were used. Respondents were required to answer all items on 5-point likert scale with responses ranging from 'strongly disagree = 1' to 'strongly agree = 5.' Descriptive statistics for the survey items are as shown in Table 3. Overall, the data showed that the mean scores for each of the four sub-categories tended to be skewed toward a more integrative continuum measured on a 5-point Likert scale. Specifically, the mean scores for the individual and social practices categories were 3.6 and 3.3, respectively, implying that L2 learners were used to practice reading in connectin to writing in both domains. Similarly, Lw learners recognized the importance of online channel in mediating reading and writing, with the mean score of 3.5 in Table 3. On the other hand, the mean score for the R-W development category was 2.9, which was relatively lower than those of the other categories.

Table 3. Descriptive statistic for survey items

Categories	Mean Score	(Standard Deviation)	Score Range (min-max)
Individual Practices of R-W	3.6	(0.51)	(2.2 ~ 4.5)
Social Practices of R-W	3.3	(0.71)	(2.0 ~ 4.2)
Online Communication Channel	3.5	(0.69)	(2.4 ~ 4.6)
R-W development	2.9	(0.75)	(1.8 ~ 4.1)

The researcher conducted reliability tests of the sample using several test methods. First, to examine a coherency across the survey items, a correlation analysis was conducted, and the results supported Likert's criterion of 'internal consistency' (Anderson 1985) by showing that each item in each category was correlated with the other items. Second, *Cronbach's alpha* was used as an alternative method to check internal consistency, and an alpha coefficient of .89 was considered to support inter-item consistency of the sample (Fraenkel and Wallen 2000). Third, *Kuder-Richardson Formula 21*, estimating a reliability using the

mean score, the variance, and the number of the items on the survey, provided a similar result, proving that it is an acceptable measure of internal consistency. Specifically, a reliability estimate of .90 showed that each item is viewed as nearly identical in every aspect and has equal difficulty.

3.3 Factor analysis

A set of hypotheses proposed in this study was tested using the factor analysis, which is used to model linear combinations of observed variables. More specifically, to establish the validity of the factors, this study used factor analysis with a Varimax rotation procedure that identified underlying dimensions of the three factors (i.e., individual practices, social practices, and online written communication channel). Also, Exploratory Factor Analysis (EFA) for constructs, extracting the relevant factors based on 1 eigenvalue cut-off, was used to identify the valid items from the sample. As an aside, some statistical techniques associated with the validity test of the factors were employed, as included in Table 4. The factor analysis outcomes for each variable is reported in Table 4.

Table 4. Factor analysis outcomes for the three independent variables

Factor name	Valid Items	Factor loadings	Eigen-value	Extracted variance	Corrected item-total correlation	α
Individual Practices	4 out of 5 items	Min-Max (0.77~0.86)	3.99	75.9	0.85	0.92
Social Practice	5 out of 5 items	Min-Max (0.80~0.89)	4.09	61.2	0.88	0.94
Online Communication Channel	4 out of 5 items	Min-Max (0.76~0.85)	4.01	68.4	0.85	0.90

Note: The Principal Component Analysis was used as an extraction method and Varimax with Kaiser Normalization as a rotation method.

First, the results in Table 4 showed that most of the items were valid measures of the variables. With regard to ‘individual practices’, 4 out of 5 items

were valid measures, as indicated by the internal consistency of $\alpha = 0.92$. The test for the '*social practices*' variable provided a similar result in that 5 out of 5 items were retained with the internal consistency of $\alpha = 0.94$. For '*online written communication channel*', 4 out of 5 items were considered to be valid, which was supported by the internal consistency of $\alpha = 0.90$.

Second, Kaiser-Meyer-Olkin (KMO) overall measure of sampling adequacy was used to establish the validity of the model, and the estimated result of 0.90 provided evidence supporting the use of these multiple items. Also, Confirmatory Factor Analysis (CFA) was conducted to test the validity of measuring specific constructs of the model according to Fornell and Larcker's approach (1981). Third, this study conducted an empirical testing of the structural model using Analysis of Moment Structure (AMOS) and estimated values for its components using the Maximum Likelihood Estimation.

4. Empirical results

The purpose of this study was to examine the role of online written communication channel in individual and social dimensions of R-W interaction, testing a set of proposed hypotheses. Using the Structural Equation Model (SEM), the empirical relationships among the theory-driven variables were tested, as shown in Table 5.

Hypothesis 1 testing the direct impact of individual practices on R-W development, was rejected, suggesting that no causal link between the two variables was established. More specifically, the individual practices variable had no significant and positive impact on R-W development, with the estimated coefficient of 0.30 ($p > 0.05$). This result shows that, in this L2 context, the theoretical relationship between practices and development was not immediate.

Hypotheses 2 tested the direct impact of social practices on R-W development, but the link between them was rejected, with the estimated value of 0.41 ($p > 0.05$). The result for Hypothesis 2 shows the marginal relationship between the two variables, indicating that social practices alone done in EFL classes do not necessarily lead to expected outcomes.

However, Hypotheses 3 and 4 provide evidence that use of online written

communication channels as a mediating variable can help to reinforce the theoretical relationship among individual practices, social practices, and R-W development. Table 5 summaries statistical significance of the respective models.

Table 5. Structural equation model (SEM) estimates

Path Diagram			Proposed Model Estimate (S.E.)	Bootstrapping # Estimate (bias)
H1	Individual Practices	→ R-W Development	0.30(0.39)	0.59(0.03)
H2	Social Practices	→ R-W Development	0.41(0.33)*	0.55(0.02)
H3	Individual Practices	→ Written Channel	0.47(.031)**	0.59(0.04)
	Written Channel	→ R-W Development	0.61(0.19)**	0.61(0.05)
H4	Social Practices	→ Written Channel	0.72(0.13)***	0.68(0.06)
	Written Channel	→ R-W Development	0.76(0.10)***	0.73(0.08)

Note: "***" and "**" denote the statistical significance of the estimated coefficient at the 1% and 5% levels, respectively. Fitness measures for tests are as follows: Chi-square = 230.3, $df = 338$, RMR = 0.09, RMSEA = 0.07, GFI = 0.85, Adjusted GFI = 0.85, and NFI=0.90.

In Hypothesis 3, the mediating role of online written communication was examined, and the test result showed that when individual practices included online written communication, its impact on R-W development was found to be significant. More specifically, the individual practices-online written communication channel path had a significant and positive effect on the dependent variable with the estimated value of 0.47 ($p < 0.05$), and the online written channel-R-W development path turned out to be significant with the estimated value of 0.61 ($p < 0.05$). The result suggests that online written communication channels can help to enhance R-W skills by improving ways of engaging R-W practices done at the cognitive level. In this respect, online written communication can mediate R-W practices and development by providing extra interactional opportunities for learners in EFL classes.

With Hypothesis 4, under the presence of online written communication channel, the theoretical relationship between the social practices variable and R-W development was tested. The results showed that online written communication channel played a critical role in that it reinforced the relationship between the two variables. This result is compared with that of Hypothesis 2 that rejected the direct impact of social practices on R-W development. More specifically, the social practices-online written channel path was significant with the estimated value of 0.72 ($p < 0.05$), and the online written channel-R-W development path was also found to be significant with the estimated value of 0.76 ($p < 0.05$).

In short, the results of hypothesis testings illustrate the importance of online written communication channels in L2 reading and writing practices. More importantly, when the interactional opportunities are constrained in traditional L2 classrooms, educational effects predicted by R-W connection theory are not likely to be realized. Thus, practitioners in EFL R-W classes need to consider how to incorporate online written communication channels into teaching practices.

5. Discussion and implications

This study can be considered as a first attempt to empirically examine the role of online written communication channels in the context of L2 reading-to-write classrooms. A set of hypotheses tested in this research clearly indicate that online written communication channels can serve as a construct to empower the theoretical relationship between R-W practices and development. More specifically, online-based communication channels help to reinforce interactional opportunities by influencing ways of interacting at the individual and social dimensions of R-W practices. The importance of online written communication channel in L2 learning has been pointed out in recent studies which attempted to incorporate SNS-based communication channels into teaching practices in various ways (Dunlap, Furtak, and Tucker 2009; Kim and Yan 2014; Yamamura 2011).

The result of this study provides some pedagogical implications applicable to

L2 reading and writing classes. First, since R-W practices do not necessarily lead learners to enhancing reading and writing skills, an appropriate way for them to engage in R-W practices should be considered as an essential part of instructional practices. As proven in Hypotheses 1 and 2, the relationship between practices and development is not linear mainly due to individual differences in practicing reading and writing. This point was well illustrated by Kim's (2012b, 2014) and Hirvela's (2004) studies that emphasized an asymmetric R-W development shaped by specific ways of L2 learners' engagement in R-W practices. In particular, Kim (2012a) showed that L2 learners tended to experience an asymmetry in reading and writing development when their R-W practices were skewed to reading or writing only. This suggests that practitioners may use appropriate ways to practice reading and writing or need to provide a social place in which L2 learners negotiate individual differences through novice-expert interaction.

Second, Hypotheses 3 and 4 emphasize the importance of using online written communication channels as a mediating variable to support the theory of R-W connection. In L2 classrooms, many online communication channels such as SNS-based interaction done out of classes, mobile devices, or types of discussion board, have been used as a part of supporting activities. However, teachers need to consider how to incorporate these methods into teaching and learning in a more synergic way. As Hornberger and Skilton-Sylvester (2000) argues, L2 learners on the margin are willing to participate in social activities only when they are exposed to an environment in which power can be equally distributed. In this respect, online written communication channels could induce inter-personal dynamics through which L2 learners shape their identity as an active member of the community. The role of online written communication channel in such informal settings are well described by the works of Chinnery (2006) and Golonka et al. (2014), which addressed the importance of the use of online communication channel in R-W practices.

Third, the result of this study also supports the importance of practicing reading in connection to writing at both the individual and social level. Specifically, the quality of interaction is closely related to how to design classroom practices in the way reading and writing activities are connected to each other. Kim (2012a), in her study, clearly indicated that the range of

classroom practices leading to 'reading-intensive' or 'writing-intensive' activities could be a serious challenge to enhancing reading and writing skills in L2 classrooms. In this respect, online written communication channels incorporated into teaching practices should be designed to provide a social place in which reading practices interact with the writing process, or writing practices interact with the reading process.

Finally, this study recommends further research done in various learning contexts. To establish the validity of this study, the role of online written communication channels should be tested further. Specifically, rather than taking the result of this study as conclusive evidence, practitioners need to conduct research in various learning contexts. In other words, outcomes obtained from classroom-based research could help support the use of online written communication channels across L2 learning contexts.

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Appendix

Survey for Reading and Writing Connection

The following survey has been designed to examine the relationships between your view on reading-writing connection and your actual approaches to literacy practices (i.e., reading and writing practices). There is no right or wrong answer to each question, but as you answer each question, you as a college student are supposed to reveal how you feel about the reading-writing connection and its practices.

A. Background Information

1. Name: _____
2. Age: _____
3. Sex: Male _____ Female _____
4. The number of years you have stayed in the US: _____
5. What is your level of education in your home country?
Elementary _____ Secondary _____ University _____ Other _____

Respond to questions below by using the following rating scale.

1 = strongly disagree / 2 = somewhat disagree / 3 = undecided /

4 = somewhat agree / 5 = strongly agree

1.	I am better in reading and writing that are related to the classroom practices..	1()	2()	3()	4()	5()
2.	I like to practice in group activities related to reading and writing.	1()	2()	3()	4()	5()
3.	I enjoy involving other students in my problem related to reading and writing processes.	1()	2()	3()	4()	5()
4.	I usually learn something when participating in reading-writing activities in class more than practicing them outside of the class	1()	2()	3()	4()	5()
5.	When having expertise, I enjoy helping others during the class.	1()	2()	3()	4()	5()

C. Individual Practices of Reading and Writing

1.	I prefer to write what I read (i.e., writing about reading).	1()	2()	3()	4()	5()
2.	I usually write personal responses regularly when I read.	1()	2()	3()	4()	5()
3.	I have to practice writing although I regularly engage in reading.	1()	2()	3()	4()	5()
4.	I am actively engaging in writing before, during, or after reading.	1()	2()	3()	4()	5()
5.	When doing my writing assignment, I read the related reading materials.	1()	2()	3()	4()	5()

D. Online Written Communication Channel

1.	I prefer to communicate with others using on-line channels (i.e., e-mail, bands, discussion board).	1()	2()	3()	4()	5()
2.	I often engage in reading and writing discussions using SNS-based communication channels..	1()	2()	3()	4()	5()
3.	On-line interactions provide an opportunity to practice reading and writing skills.	1()	2()	3()	4()	5()
4.	While interacting with others in on-line channels, I am able to improve my reading and writing skills.	1()	2()	3()	4()	5()
5.	When doing reading and writing assignments, I often utilize on-line channel to get some help from others.	1()	2()	3()	4()	5()

E. Reading-Writing Development					
1. The way that you comprehend text is similar to the way you compose text.	1()	2()	3()	4()	5()
2. Reading and writing are the same abilities you need to develop simultaneously.	1()	2()	3()	4()	5()
3. There are many common things shared by both reading and writing.	1()	2()	3()	4()	5()
4. Better readers tend to produce more quality writing than poorer readers.	1()	2()	3()	4()	5()
5. Reading and writing development should go hand in hand.	1()	2()	3()	4()	5()

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