The Development of an Online Reader Self-Perception Scale for EFL University Students

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Abstract

Self-perception, which mediates between knowledge and behavior, increasingly plays an important role in the determination of the ability to comprehend and respond to information on the Internet. Teachers need to gain insights about how EFL readers feel about themselves as readers in the Internet-based learning environment. There is a critical need for appropriate instruments to provide such information. This study was aimed at developing a scale to measure self-perception of online reading for EFL students at the university level. The scale was refined and validated through multiple procedures: interview, experts' validation, and observation through the think-aloud method before being administered to Thai university students. The exploratory factor analysis showed that the existence of two dimensions represented the clearly interpretable relationship and the identification of each dimension. Cronbach's alpha internal reliabilities also indicated a strong coherence of the items on each dimension. The results show that the final scale was constructed with two components – Social Reference and Self-Reflection, in which the first scale included four constructs: Performance Accomplishment, Physiological States, Social Feedback, and Vicarious Experience. Implications for

pedagogical practices, limitations of the study, and suggestions for future research are presented.

Keywords: self-perception, online reading scale, EFL readers

Introduction

The concept of literacy was modified to focus on the functional use of literacy in specific contexts after two decades of its inception. In the 21st century, UNESCO (2005) has emphatically evolved the concept of literacy as a continuum of learning and a plurality of literacy. Literacy can be seen as a device for communication and developing approaches to learning within a learning community. This vision of literacy in practice clearly indicates plural and multidimensional literacy influenced by a range of factors: economics, globalization, political policy, economic practices and social structures. The term 'new literacies' was introduced and defined by different social, cultural and historical contexts, which can be used by readers to gain a greater understanding of reading, such as new technology. New literacies are influenced by social or cultural practices (Gee, 2003, 2008) and new social practices (Street, 2003, 2012). In actual literacy practice, a language produces meaning in a particular context, and this context informs the meaning for the language used. New literacies are influenced by new social practices in which Information and Communication Technologies (ICTs) are used for reading (Street, 2003, 2012). The relationships between a language and its context are used to explain being literate in an increasingly technological society.

Because of the ability to use digital technology, the concept of literacy has been amplified to include the ability to learn, understand, and communicate in a meaningful way through technology (Bromley, 2010; Pianfetti, 2001). Digitalization changes literacy, so information can be viewed in many ways. Screens on computers and mobile phones are basic devices for reading in which images, videos and messages demonstrate the meaning-

making process. When readers read a text online, they are required to experience different texts designed with informational and multimedia technologies (New London Group, 2000). Online texts have additional features, where readers require technical support in order to read well. Readers are likely to read and understand hypertext by means of a nonlinear and discontinuous process, but they tend to read printed texts in a linear and sequential process (McEneaney, Li, Allen, & Guzniczak, 2009; Sandberg, 2011). Online readers can use links to move from one source of information to another. Hypertext gives them a nonlinear thinking model, and additional literacy skills, such as interactivity, navigational skills and visual knowledge are required on websites (Hahnel, Goldhammer, Naumann, & Kroehne, 2016; McEneaney et al., 2009). Consequently, advances in communication technology influence the features of literacy learning.

The comprehension of online reading is needed to consider a new text format, a new type of reading activity, and a new role of readers (The RAND Reading Study Group, 2013). Online texts typically contain hypertext and multiple media in which the texts are nonlinear and interactive (Castek, Zawilinski, McVerry, O'Byrne, & Leu, 2011; Dalton, 2014; Reinking, McKenna, Labbo, & Kieffer, 1998). Online readers can use their own ways to interpret and navigate the nonlinear information that may be different from what an author intends (Coiro, 2011). They have their own choices to search for and develop their understanding of relevant information or symbols placed in multiple layers of the hypermedia, which is hidden from their view. They can synthesize meanings of texts shown in different locations through browsing and selecting websites (Castek, et al., 2011; Leu et al., 2013). Online readers can be motivated by technology-related support and activities, but technology still has the potential to hinder learning (Eagleton & Guinee, 2002; Hahnel et al., 2016). Readers who are accustomed to printed formats may encounter difficulties with the new technology. For example, they may struggle with the use of search engines (Eagleton & Guinee, 2002), identifying

search results (Henry, 2006), and evaluating information (Fabos, 2008). This may cause the readers to experience cognitive overload, distraction, frustration (Balcytiene, 1992; Sutherland-Smith, 2002), anxiety, and resistance (Igbaria & Iivari, 1995; Liew, 2002; Thompson, Higgins, & Howell, 1991). Individuals who comprehensively read printed texts may be unsuccessful when attempting to complete similar tasks in an Internet-based environment (Leu, Kinzer, Coiro, & Cammack, 2004). Consequently, a combination of reading skills and technical support are required for online reading achievement.

Beyond the attention of various types of knowledge and skills, self-perception becomes a consistent and considerable link with levels of reading achievement (Adunyarittigun, 2015; Henk, Marinak, & Melnick, 2012, 2013; Shang, 2010). Online reading achievement requires the integration of some fundamentals of conventional reading and support for reading in an Internet-based environment. This integration is intertwined with the way that students perceive themselves as readers in order to understand and respond to the information on the Internet. The affective variables related to the efficacy of learning with cognition either help or hinder the engagement of the students with their levels of learning achievement (Kauffman, Zhao, & Yang, 2011).

Self-efficacy or self-perception is defined as individuals' judgment of their ability to organize and produce a set of actions required to reach a satisfactory level of performance (Bandura, 1986). Lawrence (2006) also describes self-perception as the judgmental conclusion of individuals developed from their experience interpretation and environments that direct their behavior. Self-perception mediates between knowledge and behavior to determine learning performance. In literacy learning, students tend to be eager to participate in online reading when they recognize themselves as capable readers. In relation to texts and links placed in multilayers on websites, they tend to use more effective reading strategies to meet their reading goal (Coiro & Dobler, 2007), manage and do their reading activities (Shang, 2010), monitor their navigation for information through

multilayered spaces, and have key words linked to relevant information (Afflerbach & Cho, 2010). On the other hand, students who feel anxious or doubtful about their own reading capabilities will not try to participate in reading tasks, and will think of these tasks as threats rather than challenges (Bandura, 2004). Self-perception affects readers' choices, effort, persistence, anxiety, and confidence in their learning (Bandura, 2004; Schunk & Zimmerman, 2007). Therefore, it can be claimed that self-perception empowers behavioral changes.

Information on self-perception can be gained from different sources: performance accomplishment, vicarious experience, social feedback, and physiological states (Bandura, 2004). Performance Accomplishment (PA) refers to students' perception of their present reading performance on the Internet compared with their past performance. Vicarious Experience (VE) refers to students' perception of the reading performance on the Internet compared with their classmates' performance. Social Feedback (SF) refers to students' perception of their reading ability on the Internet influenced by feedbacks from reliable sources (e.g. teachers, classmates or family members). Physiological State (PS) refers to students' perception of their reading ability observed from their physical or emotional signals showing either success or failure (e.g. enjoyment, anxiety, and confidence) when they read English on the Internet.

Contributions to reading achievement in the EFL context are varied. Teachers should find effective methods for instruction and make contributions to the literacy achievement levels of the students. The emphasis on skills enables EFL students to make greater progress in terms of reading development (Anderson, 1991). Although the teaching of English reading skills has been focused continuously in Thailand at all educational levels, the reading achievement of Thai learners has failed to meet satisfactory levels (Adunyarittigun, 2015; Iamla-ong, 2014; Siritararatn, 2013). Self-perception is considered to be an important component of the literacy learning process. It provides us with insights about how the students perceive themselves as

active and engaged readers. Educators can use this information to improve upon EFL students' perception regarding their levels of reading achievement and competence. Existing instruments used for measuring the self-perception of students as readers were specifically designed for native English-speaking students at elementary and secondary levels (Henk & Melnick, 1995; Henk et al., 2012, 2013; Melnick, Henk, & Marinak, 2009), and EFL college students (Adunyarittigun, 2015). Although these scales were systematically validated, they were used to measure self-perception of native English-speaking students and EFL readers in a print-based environment. However, students nowadays have extensive exposure to and experience with the Internet in which additional contributions to online reading are required to deal with online information (National Council of Teachers of English, 2007).

Because of the lack of the existing scales appropriate for measuring self-perception of online reading, the scale should be designed with the intention to capture the attributes of online readers. Therefore, this study was aimed at developing the Online Reader Self-Perception Scale (ORSPS) used to measure self-perception of online reading for EFL students at the university level.

This study attempts to address the following questions:

1. What are the constructs of self-perception of online reading for Thai EFL students at the university level?
2. Is the Online Reader Self-Perception Scale (ORSPS) developed in this study valid and reliable to measure self-perception of Thai EFL students at the university level regarding their online reading?

Methods
Participants

A sample in this study included second-year undergraduate students with different majors and levels of English proficiency. The transition from high school to university might cause some difficulties of adaptation. Most first-year university students had to face the academic challenge of university and new social

adaptation simultaneously (Karp, Holmstrom, & Gray, 1998). The difference in standards and expectations between a university and a high school tended to cause them to be ill-prepared for the transition (Venezia, Kirst, & Antonio, 2003). Third-year and fourth-year students in the university had started training for their professional practice outside (Rajamangala University of Technology Thanyaburi, 2016). These students might not be available for data collection in this study. Thus, the second-year students who shared characteristics of the sample, such as studying EFL at the tertiary level and experience in reading on the Internet, participated in this study. To ensure adequate variability in responses and develop a scale, the number of participants should be about 6 to 10 times greater than the number of items in a scale (Gable & Wolf, 1993). The participants in this study were 400 Thai EFL students. The draft of the Online Reader Self-Perception Scale for EFL students at university level consisted of 40 items. They were willing to join this study. There were 277 female (69.25%) and 123 male (30.75%) students. Their ages ranged from 20 years to 23 years. Their areas of study included Business Administration (43.5%), Liberal Arts (43.3%), Fine and Applied Arts (12.2%), and Technical Education (1%). Regarding overall academic performance measured by Grade Point Average (GPA), 52.50% of the students fell within the range of 3.00 - 4.00. 45.75% fell within the range of 2.00 - 2.99, while only 1.75% of the students fell within the range of 1.00 - 1.99. At the beginning of the study, all students were administered the Cambridge Michigan Language Assessment of English Placement Test (CaMLA EPT) to obtain baseline data on the students' level of general English proficiency in the print-based environment. The mean of the scores on the CaMLA EPT was 41 which fell into the low-intermediate level of English proficiency.

Instruments

The Cambridge Michigan Language Assessment of English Placement Test

(CaMLA EPT)

The CaMLA EPT was used to measure students' English language proficiency, especially for non-native speakers of English at the university level. It consists of 25 listening items, 20 grammar items, 20 vocabulary items, and 15 reading comprehension items in a multiple choice format. There are three alternate forms of the test used in this study. The reliability coefficient of the CaMLA EPT is greater than 0.92 (Walter & Hentschel, 2013).

The Online Reader Self-Perception Scale (ORSPS)

The ORSPS for EFL college students was developed to measure how EFL college students felt about themselves as online readers. There were two parts. The first part required students to fill out their personal information. The second part was the scale used to measure self-perception of the participants as online readers in an EFL setting.

The scale was developed from the guidelines and procedures outlined by McCoach, Gable and Madura (2013): (1) identification of theoretical constructs, (2) collection of in-depth information about self-perception of online readers in an EFL setting, (3) item development, (4) validation of items, (5) preparation for the scale, (6) administration and scoring, and (7) statistical analyses of data.

The constructs of online reading self-perception found in the literature (e.g. Bandura, 1986; Castek, et al., 2011; Grabe & Stoller, 2011) and the interview of online readers were used to develop the preliminary item pool which consisted of 40 items. Some items on the ORSPS were adapted from previous instruments (e.g. Adunyarittigun, 2015; Henk et al., 2012, 2013; Melnick et al., 2009).

After the constructs of online reader self-perception in an EFL setting were developed from the literature and the interview of

online readers, the preliminary pool of items developed from the constructs was validated in three phases.

The first phase of validation. The purpose of this phase was to validate what item captured a construct of online reader self-perception in the EFL setting. The pool of items was identified by each item which captured four theoretical constructs. Nine doctoral students who had taught English as a Foreign Language at the university level were asked to choose which item captured the construct through the use of the 5 point Likert-type scale (5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, and 1 = Strongly Disagree). In order to analyze the fit between the items and the intended constructs, items were retained if the mean confidence level of the assignment of each item met or exceeded 3.5. Any of the items which failed to meet the standard were removed or revised based on the suggestions of the experts.

The second phase of validation. The purpose of this phase was to validate how well items captured four reviewed constructs of the self-perception of online readers in an EFL setting. The revised pool of items from the previous phase was reviewed by five content experts with professional expertise in the areas of new literacies, EFL teaching, and self-perception through the use of a 5 point Likert-type scale. In order to analyze appropriateness of the fit between the items and the intended constructs, items were retained if the mean confidence level of the assignment of each item met or exceeded 3.5. Any items which did not meet this standard were removed or revised based on the suggestions of the experts.

The third phase of validation. The purpose of this phase was to validate how well the twenty participants understood and responded to the instrument in a think-aloud session. After the instrument was revised according to the experts' feedback, the instrument was translated into Thai, and the Thai edition was reviewed by three teachers with professional expertise in the area of EFL teaching. The think-aloud session was conducted in Thai so as to facilitate the participants' verbal articulation of thoughts.

The ORSPS for EFL college students which was validated and revised through three phases consisted of 40 items: 10 items on Performance Accomplishment, 10 items on Vicarious Experience, 10 items on Social Feedback, and 10 items on Physiological States. The scale was administered to a large group of students in order to find out the validity and reliability of the scale.

Data Collection

At the beginning of the study, all students were administered the CaMLA EPT to obtain the students' English proficiency. Finally, they were asked to read each statement and choose how much they agreed or disagreed with the statement through a 5-point Likert-type scale in the ORSPS.

Data Analysis

The data analysis involved the following statistics. First of all, Exploratory Factor Analysis (EFA) was used to explore and determine factors of observed variables, and relationships within each factor of the variables through a variable reduction technique (Tabachnick & Fidell, 2013). Finally, Cronbach's alpha in the SPSS program was used to examine the internal-consistency reliability of each dimension of the ORSPS.

Results and Discussion
The Constructs of Self-Perception of Online Reading for Thai EFL Learners

An examination of the item characteristics indicates that 10 out of 40 items do not contribute much to the scale. Factor analysis indicates the existence of two constructs with 15 items each in relation to the components of self-perception for online readers in an EFL environment. The degree of inter-correlation among variables was used as appropriateness of the data for factor analysis. An item in the inter-correlation which was not equal to or greater than .30 (Tabachnick & Fidell, 2013) was eliminated because it did not provide enough commonality for

factor analysis. The principal component analysis was used in the extraction method with the rotation method of varimax with Kaiser normalization (Kaiser, 1970). Eigenvalues of the two factors were greater than one. The criterion for eigenvalues was greater than one, producing the two-factor model in this study. Each variable was standardized to have a unit variance of one, and each potential factor represented a variance of at least one to be qualified for assessing variables (Lu, 2006). The total variance in the two-factor structure was 48.901%. A correlation between a factor and its variables was also strong because the loadings of 30 variables were greater than .50 (see Table 1). Ten items were removed because their loadings were less than .50, which indicated the weak correlation between a factor and its intended construct. Therefore, the final edition of the scale consisted of 30 items. The loadings used for interpretation of each factor could explain acceptable variance of the factor.

In the identification of the underlying factor structure, the belief items were theoretically related to the constructs of online reader self-perception in an EFL setting. The first and the second factors (see Table 2) were identified as Social Reference and Self-Reflection, respectively, which were developed from the casual relationships of variables loaded into each factor. The concept of Social Reference is the development of self-perception for online readers influenced by interaction with other people. The online readers form their self-perceived ability with respect to an observation of others performing the similar tasks, and feedback given by others. When social influence has an impact on online readers' self-perceived ability, they may foster or discourage the extent of confidence in online reading. In other words, individuals' judgment about online reading ability was perceived by an observation of other people or influenced by the social environment. Self-Reflection signified self-observation because the relationship among belief items was loaded onto the second factor. The factor included a comparison of online reading ability in the past and in the present, and the internal feelings about their online reading. In Self-Reflection, learners' behavior is determined

by their own experience, exploration of self-beliefs, self-assessment, and development of thoughts and actions (Bandura, 1986, 2001). That is to say, learners have their own system to observe and evaluate their experience to reflect themselves as readers. These factor names signified the common underlying concepts and could be interpreted in terms of theoretical concepts of self-perception of online reading.

Although the personal perception of Self-Reflection is an important determinant of self-perceived online reading ability, another source of self-perception is related to a social dimension that leads to literacy learning. From the perspective of social cognitive theory (Bandura, 1986, 2001), learners' learning behavior is developed by external stimuli in which an internal process is the transmission of behavior change. For this matter, the two sources of information developed from Social Reference and Self-Reflection in the Online Reader Self-Perception Scale for EFL university students with low-intermediate levels of English proficiency interact with each other, leading to literacy learning. For instance, Jackson (2002) used emails to emphasize students' past success of learning performance. It was found that the students felt relaxed about the task completion in which they persevered with and kept focusing on their work. Additionally, their self-perception was significantly related to their learning performance. The interactions among their own progression, feedback given by teachers, and their internal feelings resulted in the development of self-belief and learning performance. The constructs of Social Reference and Self-Reflection overlap inevitably in which such interaction causes an activity of literacy learning that is socially situated (Alvermann & Guthrie, 1993).

Table 1: Factor Loadings Presented in Two Factors of Social Reference and Self-Reflection

Items	Factor loadings	
	F1	*F2*
Factor 1 Social Reference		
17. I can get a better score on an English reading test than my classmates can.	.724	.724

18. I can analyze and get the meaning of information presented on different pages of websites better than my classmates can.	.705
27. I can apply grammatical knowledge of English (e.g. complex structures, tenses, and parts of speech) to my reading on the Internet better than my classmates can.	.693
26. I can understand what other people chat or share on the Internet better than my classmates can.	.670
13. I can identify and choose which information in English on the Internet is appropriate for my purpose and assignment better than my classmates can.	.653
29. I can figure out meanings of words when I read English texts on the Internet better than my	.645
25. Other people (e.g. teachers, classmates, and family) think I am able to apply grammatical knowledge of English (e.g. complex structures, tenses, and parts of speech) to understand information on the Internet well.	.643
16. Other people (e.g. teachers, classmates, and family) think I am good at employing reading strategies (e.g. using background knowledge, opening an online dictionary, and using diagrams) to help me understand English texts on the Internet.	.641
12. When I read English texts, I can link and make use of the relevant information from different pages of websites better than my classmates can.	.633
3. I have a better understanding of what I read in English on the Internet better than my classmates do.	.603
32. Other people (e.g. teachers, classmates, and family) think I will get a good score on an English reading test.	.599
23. Other people (e.g. teachers, classmates, and family) would say I know many English words when I read English texts on the Internet.	.585
22. I can employ reading strategies (e.g. using background knowledge, opening an online dictionary, and using diagrams) to help me understand English texts on the Internet better than my classmates can.	.556
11. I can use the technical knowledge (e.g. using hyperlinks, using search engines, and using menu bars) to help me understand English texts on the Internet better than my classmates can.	.553
30. Other people (e.g. teachers, classmates, and family) would say I can get the main idea of what I read in English on the Internet.	.518

Factor 2 Self-Reflection

20. I can figure out meanings of words on the Internet when I read English texts better than I could before.	.687
21. I can analyze and get the meanings of information presented on different pages of websites better than I could before.	.667
36. I can identify and choose which information in English on the Internet is appropriate for my purpose and assignment better than I could before.	.655
19. When I read English texts, I can link and make use of the relevant information from different pages of websites better than I could before.	.644
2. I can employ reading strategies (e.g. using background knowledge, opening an online dictionary, and using diagrams) to help me understand English texts on the Internet better than I could before.	.626
15. I enjoy when I search for information on the Internet.	.626
35. I enjoy using tools on the Internet (e.g. using hyperlinks, using search engines, and using menu bars) to help me understand English texts on the Internet.	.618
28. I can use the technical knowledge (e.g. using hyperlinks, using search engines, and using menu bars) to help me understand English texts on the Internet better than I could before.	.610
24. When I use an online dictionary or search for unknown words on the Internet, I feel confident of reading.	.601
1. I have a better understanding of what I read in English on the Internet than I did before.	.587
33. I can understand what other people chat or share on the Internet better than I could before.	.573
39. I can apply grammatical knowledge of English (e.g. complex structures, tenses, and parts of speech) to my reading on the Internet better than I could before.	.557
7. I enjoy when I read information (e.g. news, comments on Facebook, emails, and online lessons) in English on the Internet.	.556
8. I feel confident of dealing with English reading challenges (e.g. locating information to answer a question and finding a meaning of an unknown word from a search engine) on the Internet.	.538
38. I feel relaxed when I read information (e.g. news, comments on Facebook, emails, and online lessons) in English on the Internet through, for example, blogs and chatting rooms.	.532

Table 2: Names and Definitions of Two Factors

Factor	Name	Definition
1.	Social Reference	A reader makes a judgment about his/her online reading ability influenced by a comparison between the reader's online reading ability and his/her classmates', and the feedback on his/her online reading performance given by other people.
2.	Self-Reflection	A reader reflects his/her judgment about online reading ability influenced by a comparison of his/her online reading performance in the past and the present, and signals of success/failure that he/she feels inside about online reading performance.

In terms of categories, the constructs of online reading self-perception for Thai EFL learners at the university level found in this study are different from the previous studies. The previous studies found four constructs of self-perception (performance accomplishment, observational comparison, social feedback, and physiological states) for L1 readers (Henk, Marinak, & Melnick, 2012, 2013; Henk & Melnick, 1995; Melnick, Henk, & Marinak, 2009) and EFL readers (Adunyarittigun, 2015) conducted in the print-based environment. Henk and Melnick (1995) developed the Reader Self-Perception Scale (RSPS) for measuring the reading self-perception for English native children in grades 4th, 5th, and 6th. In the replicating work conducted with adolescents, Melnick, Henk and Marinak (2009) and Henk, Marinak and Melnick (2012, 2013) adjusted and validated a Reader Self-Perception Scale 2 (RSPS2) measuring the reading self-perception for English native speaking grades 7 through 10. Recently, Adunyarittigun (2015) developed the Self-Perception Scale for Readers of English as a Foreign Language (SPSREFL) to measure the self-perception for EFL readers at the university level. These four constructs have been proven systematically as the core elements in the development of self-perception for L1 and EFL readers in the print-based environment.

Although the two categories of the constructs of online reading self-perception (Self-Reflection and Social Reference) found in this study do not follow the four previous categories of the constructs of self-perception, they were theoretically supported by Bandura's social cognitive theory (1986, 2004). Because human functioning is considered as interaction between self-systems and external stimuli (Bandura, 1986, 2004), online readers can develop their self-perception through their own personal perception and social stimuli. Self-Reflection and Social Reference considered as personal perception and a social stimulus are sources of information used to develop a level of self-perception for online readers. Therefore, these two constructs are grounded in the social cognitive theory in which the two constructs can be used to develop the instrument for measuring self-perception of reading in the technology-based environment.

Items characterized by online reading self-perception were developed. For example:

- When I read English texts, I can link and understand the relevant information from different pages of websites better than my classmates can;
- I am better at using the technical knowledge (e.g. using hyperlinks, using search engines, and using menu bars) to help me understand English texts on the Internet than I could; and
- I feel relaxed when I read information in English and share my ideas through, for example, blogs and chat rooms on the Internet.

Compared to conventional texts, hyperlinks provide online readers with new text elements, reader elements, and reading activities. These new features are intertwined with the way that students perceive themselves as online readers in order to understand and respond to the information in a new environment.

Additionally, the final scale consisted of 30 items in which the ten items (see Appendix) were deleted from the first version of the ORSPS. Some items removed from the Self-Reflection construct involve students' perception of online reading ability,

which is influenced by a comparison of their online reading performance in the past and the present, and their feelings of success or failure in online reading performance. Less obviously, these items may reflect the comparison of present and past performance, resulting disappearance of the items. For example, item no. 4 indicated the comparison of a test score in the present and the past from an English reading test. This might mislead the students about the involvement in the online reading test. In the construct of Social Reference, students perceive that their online reading ability is influenced by other people's feedback. The items removed from this construct may not be direct feedback on online reading performance. For example, item no.6 is about others' encouragement for students' English development through positive verbal and nonverbal feedback. Item no. 9 is about others' words for English skills and technological skills, supporting to get students' professions in the future.

The Validity and Reliability of the ORSPS

The development of the ORSPS found the evidence of content validity and construct validity. The ORSPS for EFL college students with low-intermediate levels of English proficiency went through multiple stages of refinement until it met the standard of validity and reliability. In the initial validation, the content validity of the ORSPS reviewed by the experts provides the extent to which the scale appropriately covers the content area of and represents the constructs of self-perception for online readers in an EFL setting. The mean confidence between the constructs and the belief items meets the criteria of the content validity. Additionally, the scale was tested and refined with a group of the EFL college students in terms of comprehension, instructions, and response scales through the think-aloud method. The ORSPS rigorously validated through many phases has adequate content validity for the EFL college students.

The evaluation of construct validity is to examine how much the operational definition of variables in the measuring instrument can reflect the theoretical meaning of the construct of

the self-perception of online reading in an EFL setting. The evidence of construct validity found in the study was performed by factor analysis. Kaiser-Meyer-Olkin test and Bartlett's test of sphericity indicate the fitness of the data for factor analysis before the data was analyzed. The eigenvalue greater than one rule is used as the criterion for factor retention. With more than 40% of the extracted total variance, two factors can be observably produced (Ruscio & Roche, 2012). Although a scree plot can be used to number factors, a scree plot cutoff tends to be subjective, as the inflection point is not clearly shown (Williams, Brown, & Onsman, 2012). Therefore, the eigenvalues and the total variance produce a two-factor model that led to two constructs of self-perception for online readers in an EFL setting in this study—Self-Reflection and Social Reference.

A correlation between factors and their variables is determined by factor loadings results in the existence of 30 variables instead of 40 variables. Variables with a factor loading above the cutoff point of .50 are considered strong loadings (Osborne & Costello, 2009). The items loaded into each factor indicate a strong relationship between each factor and its items, resulting in a solid factor structure. The solid factor structure reaches a compromise between statistical measure and theoretical concepts, leading to a common conceptual meaning of the two constructs of self-perception for online readers.

The analyses of Cronbach's alpha, including item-total correlations, indicate the strong coherence of all 30 items loaded into each construct of self-perception for online readers. Cronbach's alpha at .70 or higher satisfies the criterion of internal reliability. Social Reference and Self-Reflection have Cronbach's alphas at .937 and .928, respectively, showing high reliability of the scale (see Table 3). All items on the ORSPS contribute to the overall scale reliability in which the items on each construct are strongly coherent. The item-total correlation also supports the uniformity and coherence among items in the scale. Item-total correlations ranged from .587 to .734 (see Table 3). The evidence of the items on the ORSPS correlates with each other and measure

the constructs of self-perception of online reading ability, indicating acceptable reliability and validity for classroom use and research purposes (Malloy, Marinak, Gambrell, & Mazzoni, 2013).

It can be concluded that the ORSPS is valid and reliable to measure self-perception of online reading for Thai EFL students at the university level. Validity and reliability of the measure are key indicators of the quality of the measuring instrument.

Table 3: Cronbach's Alphas and Item-Total Correlations for Social Reference and Self-Reflection

Item Grouping	Item-Total Correlation	Cronbach's Alpha
Factor 1 Social Reference	.734	**.937**
Item no. 17	.719	
Item no. 18	.702	
Item no. 27	.731	
Item no. 26	.715	
Item no. 13	.691	
Item no. 29	.667	
Item no. 25	.680	
Item no. 16	.686	
Item no. 12	.660	
Item no. 3	.672	
Item no. 32	.680	
Item no. 23	.652	
Item no. 22	.641	
Item no. 11		
Item no. 30		
Factor 2 Self-Reflection		**.928**
Item no. 20	.657	
Item no. 21	.728	
Item no. 36	.699	
Item no. 19	.725	
Item no. 2	.701	
Item no. 15	.647	
Item no. 35	.626	
Item no. 28	.670	
Item no. 24	.631	
Item no. 1	.587	
Item no. 33	.631	
Item no. 39	.675	
Item no. 7	.635	
Item no. 8	.616	
Item no. 38	.629	

Implications for Pedagogical Practices

The Online Reader Self-Perception Scale can provide information about students' self-perceived online reading ability for teachers. Teachers can gain an understanding of the affective states of classes and individual students in which their self-perception of online reading may be changed over time. The conclusion of the self-perceived online reading abilities can be drawn from the assessment of the group performance and individuals. To improve self-perception, students should have the satisfactory level of online reading skills that will subsequently lead to a high level of self-perception. Thus, teachers should guide students through their instruction to increase students' online reading performance. Based on the information gained from the ORSPS, teachers might need to:

1. Stimulate students to develop their online reading ability through social reference. At the beginning of the course, the ORSPS is used to measure students' perception of their online reading skills. Teachers can group students with similar scores of self-perception together so that they can enhance the students' perceived online reading ability and model their teaching style to maximize the learning outcome. Teachers can help them deal with their frustration about technology when unexpected problems happen. Teachers can introduce a solution to the technical problems, such as dead-end links and no longer available sites when they cannot locate information (Sutherland-Smith, 2002). Students learn vicariously through modeling in which observing others can form an idea of how to complete online reading tasks for the students. In the observation of teachers performing the task, students can visualize themselves reading online successfully. This can give students positive reinforcement through vicarious learning (Houtveen & van de Grift, 2007; Ziegler, 2005). The more strategies they can use the more confidence and personal control they will have for mastering reading skills (Chan, 1994; Lau & Chan, 2003; Pintrich, 1999; Shang, 2010).

2. Revise grouping techniques in class. Group revision is needed because students can share different learning strategies with other students in their groups. Teachers should ask proficient online readers to demonstrate their online reading performance through a think-aloud method in their groups. The think-aloud method provides direct access to readers' mind, allowing other students to observe how readers' understanding of online texts happens. The think-aloud method is a valuable way of making the readers' thinking visible to others (Keene & Zimmerman, 2007). Other students within groups can learn how to deal with the reading texts (e.g. making use of the relevant information from different pages of websites and identifying information on the Internet) through their peer modeling. The observation of peers performing an online reading task successfully conveys to other students that they can accomplish it as well (Schunk, 1991). This social comparison increases their confidence of the online reading ability, as well as improving their reading skills. Working collaboratively in groups helps students learn from their peers how to solve difficulties of online reading (either reading problems or technical problems), improve their reading skills and increase their confidence in performing online reading.

3. Provide students with opportunities to attain online reading success. Teachers should provide students with challenging tasks, which allow students to experience and achieve online reading. The online reading tasks should not be too easy and not too difficult for the students. To select the tasks for students, teachers need to realize their online reading ability level. The appropriate tasks should be slightly beyond their present level of online reading performance, in which they can integrate reading strategies with technical skills to understand and respond to online texts. Once students succeed in a text level, they can move up to an upper level of online reading texts (Ormrod, 2008; Vygotsky, 1978).   In the same vein, such practice can enhance their self-perceived reading abilities to put effort into their tasks. These real tasks make them gain positive experience in online

reading, and their own experience increases their confidence in online learning performance.

Limitations of the Study and Suggestions for Future Research

1. The sample in this study consisted of many university students with different genders, different levels of overall academic performance, and different years of English language learning. However, the sample in this study was limited to one university. It focused on the second-year university students. In this study, the constructs of the scale were limited to students from the faculties of Liberal Arts and Business Administration. The scale might not be suitable for students from other faculties, such as science and engineering. To achieve generalizability, a different sample should be conducted. Replicating this study with a more diverse sample along with different contexts would prove to be significant as it could further support the validity and reliability of the Online Reader Self-Perception Scale. Additionally, the online texts are based on the websites and the desktops in which the constructs of the scale were developed from. There is a critical need for conducting research in this specific area with different populations, platforms of reading online, and different kinds of online text in order to test the generalizability of the Online Reader Self-Perception Scale.

2. An instrument should be developed to measure students' self-perception of other language skills (e.g. writing, listening, and speaking) in technology-based environments. Students who possess high self-perception have a tendency to learn and achieve more than those with low self-perception (Bandura, 1997; Ormrod, 2008; Shang, 2010). Accordingly, self-perception is considered an influential component of learning achievement. The instrument will be used to understand how the students perceive themselves as active and engaged learners. Educators can use this information to improve the students' perception of their language skills as well as learning performance.

3. There is a need to conduct further research to develop norming data for the Online Reader Self-Perception Scale. The

study should include a sample of students with different online reading abilities, different demographic and geographical locations, and different educational backgrounds. This will help interpret students' scores, for instance, the average range for each scale, the above-average range or the below-average range. Teachers will benefit from the information and be able to provide appropriate personalized instruction to help the below-average group to achieve their reading success and develop their self-perception. The information gained will help teachers provide the above-average group with support for their reading growth and increased self-perception.

Conclusion

In technology-based environments, reading comprehension has been influenced by the advent of communication technology, which, in turn, informs the changing forms of literacy learning, instruction, and assessment. Reading achievement requires the integration of some fundamentals of conventional reading and support for technology-based environments. This integration is intertwined with the way students perceive themselves as readers to understand and respond to texts on the Internet. With a variety of analyses, the Online Reader Self-Perception Scale is a valid and reliable measure in which different dimensions of self-perception of online reading for low-intermediate EFL university students can produce reliable measures. An examination of the item characteristics indicates that 10 out of 40 items do not contribute to the measuring instrument. Therefore, dropping the 10 items improves the strength and reliability of the scale. The two constructs of the Self-Perception of Online Reading for EFL university students consists of social reference and self-reflection. The important implications of these results in this study concern the roles of self-perception of online reading and how it can be used to enhance their reading abilities. The Online Reader Self-Perception Scale provides an understanding of the affective states for a group of students and an individual affected by the belief in the judgment on online reading. It is hoped that this measuring

instrument can contribute to vital information in which students' voices can be acknowledged and accounted for as this should be recognized by teachers and administrators.

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APPENDIX

THE FIRST VERSION OF AN ONLINE READER SELF-PERCEPTION SCALE FOR EFL UNIVERSITY STUDENTS

		Statements	5	4	3	2	1
PA	1	I have a better understanding of what I read in English on the Internet than I did before.					
PA	2	I can employ reading strategies (e.g. using background knowledge, opening an online dictionary, and using charts) to help me understand English texts on the Internet better than I could before.					
VE	3	I have a better understanding of what I read in English on the Internet than my classmates do.					
PA	*4	I can get a better score on an English reading test than I could before.					
SF	*5	Other people (e.g. teachers, classmates, and family) think I can read English texts on the Internet well.					
SF	*6	Other people (e.g. teachers, classmates, and family) encourage me to develop my English reading skill through positive feedback (e.g. words, compliments, and facial expressions).					
PS	7	I enjoy when I read information (e.g. news, comments on Facebook, emails, and online lessons) in English on the Internet.					
PS	8	I feel confident of dealing with English reading challenges (e.g. locating information to answer a question and finding a meaning of an unknown word from a search engine) on the Internet.					
SF	*9	Other people (e.g. teachers, classmates, and family) would say my English and technology skills will support me to get a good job in the future.					
PS	*10	I feel satisfied with my English reading skill on the Internet.					
VE	11	I can use the technical knowledge (e.g. using hyperlinks, using search engines, and using menu bars) to help me understand English texts on the Internet better than my classmates can.					
VE	12	When I read English texts, I can link and make use of the relevant information from different pages of websites better than my classmates can.					
VE	13	I can identify and choose which information in English on the Internet is appropriate for my purpose and assignment better than my classmates can.					
SF	*14	Other people (e.g. teachers, classmates, and family) like to exchange ideas of how to improve English language skills with me through the Internet.					
PS	15	I enjoy when I search for information on the					

		Statements	5	4	3	2	1
		Internet.					
SF	16	Other people (e.g. teachers, classmates, and family) think I am good at employing reading strategies (e.g. using background knowledge, opening an online dictionary, and using charts) to help me understand English texts on the Internet.					
VE	17	I can get a better score on an English reading test than my classmates can.					
VE	18	I can analyze and get meanings of information presented on different pages of websites better than my classmates can.					
PA	19	When I read English texts, I can link and make use of the relevant information from different pages of websites better than I could before.					
PA	20	I can figure out meanings of words when I read English texts on the Internet better than I could before.					
PA	21	I can analyze and get meanings of information presented on different pages of websites better than I could before.					
VE	22	I can employ reading strategies (e.g. using background knowledge, opening an online dictionary, and using charts) to help me understand English texts on the Internet better than my classmates can.					
SF	23	Other people (e.g. teachers, classmates, and family) would say I know many English words when I read English texts on the Internet.					
PS	24	When I use an online dictionary or search for unknown words on the Internet, I feel confident of reading.					
SF	25	Other people (e.g. teachers, classmates, and family) think I am able to apply grammatical knowledge of English (e.g. complex structures, tenses, and parts of speech) to understand information on the Internet well.					
VE	26	I can understand what other people chat or share on the Internet better than my classmates can.					
VE	27	I can apply grammatical knowledge of English (e.g. complex structures, tenses, and parts of speech) to my reading on the Internet better than my classmates can.					
PA	28	I can use the technical knowledge (e.g. using hyperlinks, using search engines, and using menu bars) to help me understand English texts on the Internet better than I could before.					
SF	*14	Other people (e.g. teachers, classmates, and family) like to exchange ideas of how to improve English language skills with me through the Internet.					
PS	15	I enjoy when I search for information on the Internet.					

			Statements	5	4	3	2	1
SF	16		Other people (e.g. teachers, classmates, and family) think I am good at employing reading strategies (e.g. using background knowledge, opening an online dictionary, and using charts) to help me understand English texts on the Internet.					
VE	17		I can get a better score on an English reading test than my classmates can.					
VE	18		I can analyze and get meanings of information presented on different pages of websites better than my classmates can.					
PA	19		When I read English texts, I can link and make use of the relevant information from different pages of websites better than I could before.					
PA	20		I can figure out meanings of words when I read English texts on the Internet better than I could before.					
PA	21		I can analyze and get meanings of information presented on different pages of websites better than I could before.					
VE	22		I can employ reading strategies (e.g. using background knowledge, opening an online dictionary, and using charts) to help me understand English texts on the Internet better than my classmates can.					
SF	23		Other people (e.g. teachers, classmates, and family) would say I know many English words when I read English texts on the Internet.					
PS	24		When I use an online dictionary or search for unknown words on the Internet, I feel confident of reading.					
SF	25		Other people (e.g. teachers, classmates, and family) think I am able to apply grammatical knowledge of English (e.g. complex structures, tenses, and parts of speech) to understand information on the Internet well.					
VE	26		I can understand what other people chat or share on the Internet better than my classmates can.					
VE	27		I can apply grammatical knowledge of English (e.g. complex structures, tenses, and parts of speech) to my reading on the Internet better than my classmates can.					
PA	28		I can use the technical knowledge (e.g. using hyperlinks, using search engines, and using menu bars) to help me understand English texts on the Internet better than I could before.					
VE	29		I can figure out meanings of words when I read English texts on the Internet better than my classmates can.					
SF	30		Other people (e.g. teachers, classmates, and family) would say I can get the main idea of what I read in English on the Internet.					
PS	*31		I feel confident I can use my grammatical					

		Statements	5	4	3	2	1
		knowledge of English (e.g. complex structures, tenses, and parts of speech) to help me understand information on the Internet.					
SF	32	Other people (e.g. teachers, friends, or family) think I will get a good score on an English reading test.					
PA	33	I can understand what other people chat or share on the Internet better than I could before.					
SF	*34	Other people (e.g. teachers, friends, or family) think I can find and choose an appropriate website for my reading assignment.					
PS	35	I enjoy using tools on the Internet (e.g. using hyperlinks, using search engines, and using menu bars) to help me understand English text on the Internet.					
PA	36	I can identify and choose which information in English on the Internet is appropriate for my purpose and assignment better than I could before.					
PS	*37	I feel worried when I cannot search for information in English to complete my reading assignment.					
PS	38	I feel relaxed when I read different information in English and share my ideas through, for example, blogs and chatrooms on the Internet.					
PA	39	I can apply grammatical knowledge of English (e.g. complex structures, tenses, and parts of speech) to my reading on the Internet better than I could before.					
PS	*40	I am not worried about getting the correct main idea of what I read in English on the Internet.					

Note. Items with an asterisk were removed in the final version of the ORSPS.