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The effects of differentiated reading instruction on reading comprehension and self-efficacy of Thai undergraduate students

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Article Info

Abstract

This study examined the effects of differentiated reading instruction (DRI) on the reading comprehension and self-efficacy of undergraduate students. The study indicated their improvement in both areas after the intervention. Thirty-three students attending the course of English for Scientists were chosen for the study. The pre-test in reading comprehension and the self-efficacy questionnaire were administered before the intervention. The scores of the pre-test of reading comprehension were used to divide the students into two groups according to their level of reading proficiency: lower-proficiency level students and higher-proficiency level students. The post-test of reading comprehension and that of self-efficacy was administered after the course to measure the students' improvement. The content, process and product were tiered to divide the students into two groups. To differentiate the content and process, the materials were tiered according to each group's reading ability level. Intermediate-level students received the on-level texts while beginner-level students received the simplified texts. Scaffolding was also provided to the students to help their reading according to their proficiency. To differentiate the product or students' performance, the criteria for assessing students' presentation were also adjusted to suit the level of the students. The findings showed a significant improvement in both reading comprehension and self-efficacy, with more significant improvement in the lower-level proficiency group. Further research should explore how differentiated instruction functions with learners in different contexts and other language skills.

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Introduction

In Thailand, having good reading skills is important for students, especially for tertiary education because English courses tend to use reading-based tests. According to Noor (2006), reading is the most important skill for the students in a higher education learning situation because the texts are usually more academic and complex. Most university students are faced with difficulties in their studies because they do not know how to use reading strategies effectively. Therefore, in this study the focus is on enhancing students' reading comprehension ability because in academic settings, reading is a foundation skill that facilitates other learning (Noor, 2006).

Many universities in Thailand put students in one large classroom according to their department causing students to be put into an academic environment that might not match their language proficiency. According to McBride (2004), the one-size-fits-all curriculum can never meet the needs of learners because not everyone can learn in the same way. Differentiated instruction (DI) is seen as the way to support students who have to study in the class in which students have mixed abilities. In sum, teachers should prepare and design a course according to students' interests, abilities, and learning styles using appropriate scaffolding and teaching methods.

To design differentiated classes, it is important to acknowledge various students' backgrounds, readiness levels, interests and learning styles (Hall, 2002). In supporting students according to their actual level, the focus is on scaffolding which is the process that can help students to reach the level that they were not able to reach before. According to Vygotsky's ZPD, the area of the student's present level and the potential level that they can do with assistance, learning can be enhanced when the students receive scaffolding or assistance. Therefore, scaffolding is one of the key elements to bring the students to the desired level without struggling.

Another important concept that has been investigated as a way to enhance students' academic success is self-efficacy. A person with a low sense of self-efficacy tends to possess negative thoughts and think of difficult tasks as threatening (Suraya & Ali, 2009). In Thailand, students have less chance to expose themselves to the practical English language; therefore, Thai students tend to feel insecure when performing a task in English. It is important to build self-efficacy for them so that they can become successful language learners. According to Bandura (1984), self-efficacy has a crucial influence on the learning process by helping students to progress academically and cognitively. Self-efficacy enhancement is one of the ways to improve students' progress in learning.

To explore the implementation of differentiated instruction in an EFL reading classroom context, this study was conducted to investigate the effects of a differentiated teaching approach on the reading comprehension and self-efficacy of undergraduate students.

Literature Review

Differentiated Reading Instruction

According to Tomlinson et al. (2003), differentiated instruction is an approach to teaching in which teachers differentiate three elements: content, process, and product according to students' interest, readiness, and learning profile. It is one of the approaches that help achieve the goals of individual differences in language learning. In a reading class, not all students require the same treatment because of their various abilities in comprehension and lexical knowledge. To enhance students' abilities to understand enough of the reading, the text needs to be within their proficiency range (Aebersold & Field, 1997). Additionally, not all learners possess the same strategies while reading; therefore, to develop reading strategies that enhance comprehension, it is important to learn a brief taxonomy of strategies for reading comprehension (Brown, 2004). With the integration of DI in a reading class, the class with mixed-ability students can gain the most benefit from learning.

Many researchers and educators conducting research on DI have found positive results (Bantis, 2008; Hawkins, 2007; McCullough, 2011). Many studies were on young learners and they found that implementing DI to school students had positive effects in improving education (Hawkins, 2007) in writing skills (Bantis, 2008) and in promoting vocabulary and reading comprehension (Vibulphol, 2020). However, in the Thai context, differentiated learning has not been widely explored, especially with adults EFL learners.

Self-Efficacy

In learning, self-efficacy is the belief that students develop their academic capabilities in performing tasks. According to Bandura and Schunk (1981), people judge or perceive their own abilities and that affects the quality of their performance. People with a strong sense of self-efficacy tend to overcome an obstacle because they find it challenging (Bandura, 1984). Many studies have discovered that self-efficacy is a strong predictor of language improvement (Kittikanan & Sadimonton, 2017; Raoofi et al., 2012). Therefore, in order to help students to succeed in their learning, learners' beliefs concerning their self-efficacy should be focused as it might help enhance their language achievement. According to Bandura (1997), the four self-efficacy sources which should be focused are mastery experience, vicarious experience, verbal persuasion, and emotional states.

Another factor concerning students' confidence and motivation in learning is the affective filter. According to Krashen (1985), learners with high motivation, high self-confidence and low level of anxiety or affective

filter tend to become more successful in language acquisition. Therefore, to improve self-efficacy, one of the important conditions needed in class is to reduce students' anxieties. According to Anyadubalu (2010), self-efficacy and anxiety in learning were seen as the predictors of learning performance. It is crucial for teachers to promote a positive atmosphere to encourage students in a supportive way in order to prepare them for learning effectively and becoming efficacious.

In order to promote self-efficacy, DI can be a promising approach as it creates a positive atmosphere by allowing students to gain assistance from teachers and peers as well as be engaged in materials and assessment processes based on their level of proficiency. To investigate further into DI on reading comprehension at the tertiary level, this study aimed to explore the implementation of differentiated reading instruction (DRI) and its effects on a mixed-ability undergraduate class. The research questions of the study were:

1. What are the effects of DRI on the reading comprehension of undergraduate students?

2. What are the effects of DRI on the self-efficacy of undergraduate students?

Methodology

The research followed a one-group, pre-test and post-test, quasi-experimental design with a mixed method integrating the quantitative and qualitative data.

Participants

The participants in the study were 33 subjects age ranging from 19–21. They were second year students from King Mongkut's University of Technology North Bangkok (KMUTNB). The subjects were an intact group from the Department of Food and Environment Technology who took the English for Scientists course in the second semester of the academic year 2019. The students were divided into two groups of intermediate level (group A) and beginner level (group B) according to their grade from the previous English course and their score on the reading comprehension pre-test.

DRI Frameworks

The study proposed the following instructional framework (Figure 1) adapted from Bandura (1997) and Tomlinson et al. (2003). To illustrate, during the implementation of DRI, self-efficacy sources were provided during the teaching process. Mastery and vicarious experiences were promoted through the differentiation of content, process, and product. The content was differentiated in the forms of tiered reading texts. In terms of process, the teacher's scaffolding was provided according to the students' levels. As for product, the students' performance was assessed with the criteria customized according to the students' proficiency level. With students' actual experience of success and by observing others' success, they gradually raised the beliefs of their self-efficacy. Verbal persuasion was enhanced through teacher's supportive feedback and scaffolding as a means of persuasive boosts which could encourage self-efficacy. As for emotional states, a positive atmosphere or environment was created to reduce stress and anxiety.

For class organization, the following framework (Figure 2) adopted from the text-processing strategies of Paris et al. (1996) and Crandall (1995) was followed. The lesson included: (1) pre-teaching; (2) while-teaching; (3) post-teaching; and (4) individual reading stages. In the second and third stage (while-teaching and post-teaching), the DRI using tiered assignments was applied. In the pre-reading part, as a whole-class instruction, the students were prompted with vocabulary and background knowledge. In the while-reading and post-reading parts, the students worked as a group on tasks, exercises, and presentations. In the third stage (post-teaching), the group presented their work with the rubric customized according to the group level. The rubric for assessment was not for grading the students, instead, it was for providing feedback.
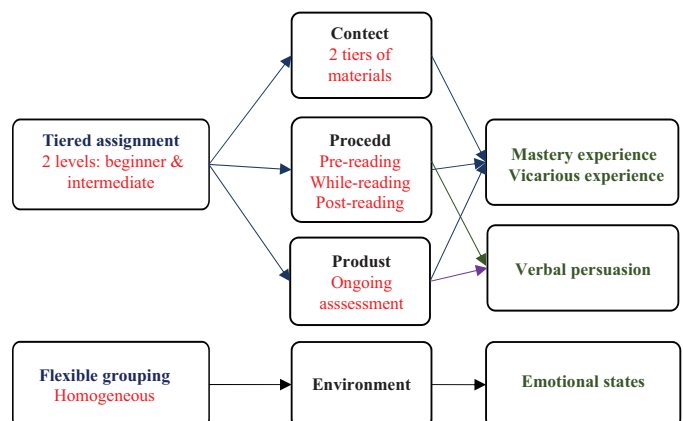

Figure 1 Instructional framework for DRI and self-efficacy (Bandura, 1997 & Tomlinson et al., 2003)
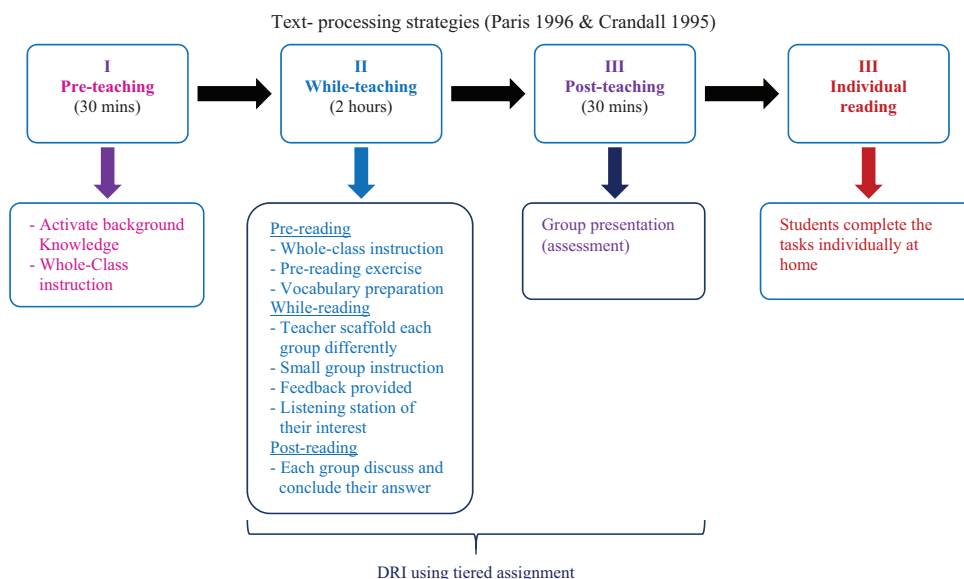
Text- processing strategies (Paris 1996 & Crandall 1995)

Figure 2   Framework for DRI class organization

Research Instruments

There were two instruments in the study: (1) the pre-test and post-test of reading comprehension; and (2) the self-efficacy questionnaire.

The pre-test and post-test of reading comprehension were the same test consisting of three test constructs, literal comprehension, inferential comprehension, and evaluation. The test constructs were based on the reading comprehension frameworks proposed by Clymer (1968); Brown (2004); Davis (1968). It consisted of fifty multiple-choice items. The time allotment for taking the test was one hour and thirty minutes. The test was validated by three experts, and was revised according to the expert's suggestions. The IOC results of 0.81 showed the validity of the test.

The self-efficacy questionnaire consisted of the questions about self-efficacy on reading comprehension, self-efficacy on studying in a language course, and self-efficacy based on sources of efficacy. It consisted of nineteen questions. The time allotment for completing the questionnaire was thirty minutes. The questionnaire was validated by three experts and revision was made accordingly. The method of Coefficient Alpha of Cronbach was used. Coefficient value of 0.87 confirmed the reliability of the questionnaire.

Data Collection

The pre-test of reading comprehension and the self-efficacy questionnaire were administered in the first week of the semester to record the students' reading comprehension and self-efficacy scores before the implementation of DRI. The post-test of reading comprehension and the self-efficacy questionnaire were administered in week 12 of the semester to evaluate the students' reading comprehension and self-efficacy after the treatment.

Data Analysis

The quantitative data consisted of the students' scores from the pre-test and post-test of reading comprehension and the self-efficacy questionnaire. They were calculated by using paired samples T-Test to explore students' improvement in both areas. Cohen's d was used to investigate the effect size to identify the magnitude of the difference between the pre-test and the post-test scores of reading comprehension and the scores gained from the self-efficacy questionnaire.

Results

Results of DRI on Reading Comprehension

Results of implementing DRI revealed that there was an increase in the post-test mean score of reading comprehension with a large effect size ($d = -0.96, p < .05$) (Table 1). The p-value of less than or equal .05 shows that the result was statistically significant. However, group B students had more significant improvement than group A (Table 2).

Table 1 Findings of the Reading Comprehension pre-test and post-test scores of students participating in DRI

	N	Mean	SD	Mode	t	p	d
Pre-test	33	22.15	4.604	26	4.132	.00*	-0.96
Post-test	33	26.52	4.549	25			

*Note: *p* < .05.*

Table 2 Comparison of the pre-test and post-test reading comprehension scores between the students in Group A and Group B

	Mean	SD	t	p	d
Group A (*n* = 13)					
Pre-test	26.85	1.676	-0.443	.666	-0.168
Post-test	27.54	5.577			
Group B (*n* = 20)					
Pre-test	19.00	3.112	-5.825	.00*	-1.98
Post-test	25.95	3.776			

*Note: *p* < .05.*

Results of DRI on Self-Efficacy

The findings in intervention and its effects on self-efficacy revealed the positive effects of DRI. The mean score of the students' answers on the questionnaire after the implementation of DRI (mean = 3.95, SD = 0.562) was higher than those before the intervention (mean = 3.49, SD = 0.414) and it had large effect size (d = -0.931, p < .05) (Table 3). The results emphasized the effectiveness of the instruction, showing significant improvement.

Discussion

Positive Effects of DRI on Reading Comprehension

The findings support Tomlinson (2003) that DI classes offer students opportunities to perform with their high capability. With enough and appropriate help from more capable peers and instructors, the students can reach the level that they can do independently. The positive effects found in the study concerning the effects of DRI on reading comprehension were consistent with the positive effects of previous studies on differentiated instruction (Aliakbari & Haghighi, 2012; McCullough, 2011; Vibulphol, 2020). However, the interesting finding that the beginner group improved more than the intermediate group can be explained by the notion of ZPD. Different learners progress at different speeds in learning and require different help to reach the zone that they can perform independently. Other factors, such as motivation or self-confidence, might cause them to possess a larger zone of development. Learners with higher levels might already have passed a large portion of their ZPD. In other words, the higher achievers might already have reached the level where they might not be able to progress further easily.

Positive Effects of DRI on Self-Efficacy

The findings of the positive effects of DRI on self-efficacy support Krashen's Affective Filter Hypothesis. Learners with a low affective filter have low anxiety and that leads to a successful performance in learning. The class in this study was equipped with a stress-free and enjoyable atmosphere. As reported by the students, the materials and scaffolding appropriately provided to the students according to their proficiency level helped lessen their anxiety. The positive effect in this study was similar to that of the previous studies (Kitikanan & Sasimonton, 2017; Raoofi et al., 2012), which found that self-efficacy in learning English can be seen as a predictor of language performance. Moreover, according to Tomlinson et al. (2003), learner interest has a link to learning motivation which can positively influence learning. DI class focuses on students' interest and that would lead to students' high engagement and motivation. Higher motivation might be another reason for self-efficacy improvement.

Table 3 Comparison between the scores of Self-Efficacy questionnaire before and after the intervention and their effect size

	n	Mean	SD	t	p	d
Pre-test	33	3.49	0.414	-5.063	.00*	-0.9319
Post-test	33	3.95	0.562			

*Note: *p* < .05.*

Conclusions and Recommendations

The results of this research revealed that DRI is an effective approach that can be used to enhance students' reading comprehension and self-efficacy. The content, the process, and the product, which were differentiated to serve students with different proficiency levels helped create the zone of proximal development, leading to a significant improvement in their learning, especially for the beginners. This highlights the enhancement of students' reading comprehension ability through the aspects of a positive environment, collaborative work, scaffolding, and tiered assignments. In a higher education setting in which the content of the study is complex, the states of a stress-free and positive environment help improve students by lowering their anxiety. Additionally, with teachers' and more capable peers' support, learners acquire more knowledge, vocabulary and reading skills. That is to say, in a class with mixed-ability students, DRI can facilitate all students with different proficiency levels in that it helps maximize their learning capacity.

For future research studies, DRI can be conducted in different settings and with a larger number of participants. Additionally, as reported by some students in this study, learning more lexical knowledge helped them comprehend reading more easily and made them feel more confident with reading. Further investigation on how DI helps learners improve their lexical knowledge might help contribute to the area of vocabulary teaching.

Conflict of Interest

There is no conflict of interest.

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