Investigating the Effect of Differentiated Instruction in Light of the Ehrman & Leaver Construct on Grammar Learning

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Abstract
This study sought to explore the effect of Differentiated Instruction, in light of learners' cognitive profiles, on female English as a Foreign Language (EFL) foundation year students' learning of grammar at King Abdul-Aziz University in 2017-2018. Following a pretest-intervention-posttest experimental design, the first part of the study aimed at exploring the phenomenon from a positivist point of view. The second, on the other hand, attempted to grasp the way learners perceive Differentiated Instruction through short one-to-one interviews of the participants. The quantitative results revealed that although the application of Differentiated Instruction made a significant difference between the pretest and posttest results of students in the experimental group, the difference in performance between these students and their counterparts in the control group was not statistically significant. The qualitative results, on the other hand, revealed that learners perceive the application of Differentiated Instruction in a positive manner. Three themes were found to be recurrent in their responses: the increased motivation, appropriateness of access, and autonomy. Based on these findings, a few implications and recommendations were drawn.
Keywords: differentiated instruction, Ehrman & Leaver Construct, English as a Foreign Language (EFL), explicit and implicit teaching, grammar learning

1. Introduction

In the literature of language learning and teaching, it has been long observed that while almost all children are successful in acquiring a first language, second language learners' success varies significantly from one person to another (Lightbown & Spada, 2013). According to Brown (2006), second language development is marked by 'systematicity' and 'variability.' It is systematic in the sense that it develops in a way similar to that of a first language and variable because it can be easily affected by cognitive and affective factors. On this ground, teachers who work in second language classrooms are always advised to ensure that each learner gets an appropriate access to the lesson. One way of doing so is through the implementation of what is called "Differentiated Instruction" (Tomlinson, 2014).

1.1 Statement of the Problem: Why not Just Teaching to the Middle?

Classes in which students are different in terms of their competence, needs, interests and styles of learning are called "mixed-ability classrooms." Ireson, Hallam, & Plewis (2001) argue that the first step to teaching these classes is to understand that students have different points of strength and weakness and learn at different rates and in different manners. In spite of this, Al-Shammakhi & Al-Humaidi, (2015) allude that many teachers mistakenly view a mixed-ability class as one mainly consisting of average learners; with a minority of either weak or extraordinary children. As a result, it is common for those teachers to deal with this issue by teaching to the average students and leaving the rest behind.

Delivering monotonous lesson plans through a single instructional method is believed to overlook the different learning needs of students in a class (Subban, 2006). Thus, many teachers who have experienced teaching to the middle and using one instructional method reported some pedagogical drawbacks. For example, in a study conducted by Hernandez (2012) in the Middle East on two multilevel classes, one of the teachers pointed out that teaching to the average students makes the others extremely bored and frustrated. Another teacher added that when she tried to do so, she ended up teaching no one in class.

As educational institutes are becoming more and more diverse, their ability to provide students with a meaningful and equal education is directly associated with their willingness to invest the resources and time to step away from "teach-to-the-middle" and "one-size-fits-all" instruction. We, as educators, must do our best to meet individuals at their areas of readiness, interest, and learning profiles (Tomlinson, 2014) and that is the idea behind Differentiated Instruction.

1.2 Aim of the Study, Research Questions and Hypotheses

The current study aims at putting Differentiated Instruction in light of Ehrman and Leaver's (E & L) Construct of Cognitive Profiles into practice and investigating its effects on grammar learning in EFL classrooms at King Abdul-Aziz University. It attempts to answer the following research questions:

RQ1: Does Differentiated Instruction in light of the E&L Construct have any significant impact on students' grammar learning?

RQ2: How do participant students perceive the integration of Differentiated Instruction into their language classroom?

The null hypotheses for the first research question, therefore, state the following:

NH1: In a grammar achievement posttest, students in the experimental group **will not achieve significantly higher** ratings than those in the control group.

NH2: There will be **no significant difference** between the scores of students in the experimental group before and after the experiment.

The alternative hypotheses, on the other hand, state that:

AH1: In a grammar achievement test, students in the experimental group **will achieve significantly higher ratings** than those in the control group.

AH2: There will be **a significant difference** between the scores of students in the experimental group before and after the experiment.

The NHs are to be accepted if $p<0.05$, whereas the AHs are to be accepted if $p>0.05$.

1.3 Significance of the Study

The Preparatory Year at King Abdul-Aziz University is a program designed to subject the newly-admitted students in general preparatory courses for two academic semesters in a row. These courses include English, Statistics, mathematics, communication skills …etc. Since each student is obliged to go through this program, classrooms, where English as a FL and other general courses are taught, are believed to be full of mixed-ability students (Al-Subaiei, 2017). On this ground, the implications of the current study will be of importance when enhancing the quality of teaching and learning in these particular classrooms.

2. Literature review

2.1 Differentiated Instruction:

Popularized by Tomlinson (2001), Differentiated Instruction is defined as a method of teaching that is characterized by deliberate and conscious attempts to address students' diversity (Joseph, 2013). It is a proactive, student-centered, qualitative, and rooted-in-assessment process and a series of whole-class, large/small group, and individual instruction (Tomlinson, 2001). Furthermore, it is an act of adding and modifying rather than of substituting. This view is supported by Benjamin (2006) who writes that the core of Differentiated Instruction is the appreciation of rituals and varieties. Rituals, according to her, represent norms and expectations, whereas varieties provide excitement and freedom of choice. The reason for adopting this method of teaching, as believed by Tomlinson (2014), is to enhance three crucial elements: efficiency of learning, access to learning and motivation to learn.

When identifying what Differentiated Instruction really is and what it is not, Tomlinson (2001) points out that the idea behind this concept is significantly different from Individualized Instruction that appeared in the 70's. Unlike the latter, the goal of Differentiated Instruction is not to allocate a separate level for each student. Instead, teachers in differentiated classrooms might find themselves sometimes working with everyone in the class, sometimes with smaller groups and sometimes with individual students. Furthermore, Differentiated Instruction is not a way of making heterogeneous groups homogeneous, and this is one reason why its proponents disregard the notion of "fixed-grouping" and celebrate the "flexible grouping" of students (Baecher, Artigliere, Patterson, & Spatzer, 2012).

Differentiated Instruction, according to Levy (2008), requires the modification of a given curriculum with respect to students' needs, learning styles and strengths. More specifically, it is

directed towards three curricular elements: content, process, and product. Tomlinson (2001) defines the *content* as the input or what students are expected to learn, the *process* as the manner of learning, and the *product* as the output or how students show evidence of learning. To differentiate the *content*, teachers, for instance, may make use of supplementary texts, novels or stories at different levels (Algozzine & Anderson, 2007). Differentiating the *process*, on the other hand, involves using sense-making activities such as journal writing, model making and choice-boards (Tomlinson, 2001). Finally, since the purpose behind the *product* is for students to demonstrate their understanding of the *content*, teachers can differentiate this part of the curriculum by making contracts or lists of potential project options (Algozzine & Anderson, 2007).

2.2 Strategies that Support Differentiation
There is a considerable variety of strategies from which teachers, who are interested in differentiating their classrooms, can choose (Tomlinson, 2001; Tomlinson, 2014). The ones, used during the intervention sessions in this study, are the following:
Complex Instruction: It is one of the dominant and most common strategies of differentiation. As per Tomlinson (2001), teachers using this strategy do in-depth studies on their students to determine their intellectual abilities. Then they design their lessons using high-level learning tasks drawn on the strengths of their students.

Learning contracts: In simple terms, a learning contract is one that functions as an agreement between students and their teachers and involves giving learners some freedom over the way they prefer to learn and apply new concepts. Most of the learning contracts offer students a variety of options from which they can choose and work accordingly (Tomlinson, 2014).
Group investigations: Using this strategy, teachers are expected to guide students' thinking through classroom investigations of topics related to what is being taught. The teacher divides students into groups, helps them plan for the investigation, conduct the investigation, report the results and evaluate their progress (Tomlinson, 2014).
4-Mat: According to Tomlinson (2001), this strategy suggests planning a lesson in which four learning preferences are stressed: 1) mastery of the new information, 2) understanding the main points, 3) getting personally involved and 4) creating something new out of the newly learned information.

2.3 E & L Construct
Tomlinson (2001), the developer of Differentiated Instruction, classifies individual differences into three main categories: readiness, interests, and learning profiles. The E&L Construct, developed by Ehrman & Leaver (1997, 2003 as cited in Leaver, Ehrman & Shekhtman, 2005) is one of the most prevalent models of cognitive styles. It is comprised of ten continuum-like scales: 1) Analogue–digital, 2) Concrete–abstract, 3) Field independent–field dependent, 4) Field sensitive–field insensitive, 5) Global–particular, 6) Impulsive–reflective, 7) Inductive–deductive, 8) Leveling–sharpening, 9) Random–sequential, 10) Synthetic–analytic. *Table 1* summarizes the characteristics of learners according to each scale (Dörnyei, 2005; Leaver, Ehrman & Shekhtman, 2005; Ehrman, 1996; Ehrman & Leaver, 2003).

Table 1. *Summary of the E & L Scales*

Scale	Pole	Characteristics of learners
Field Dep.	Field dependent	Rely on the textbook, teacher, or syllabus to organize various forms of an element prior to the learning setting.
	Field independent	Can notice a specific linguistic element wherever they come across it and can subconsciously categorize the various forms of that element.
Field Sens.	Field sensitive	Tend to use the whole language environment for learning.
	Field insensitive	Do not focus on the language environment but rather they only pay careful attention to the language element being studied.
Random-Sequential	Random	Like to develop or structure their own approaches to language learning.
		Complete assignments in no apparent (to the outsider) order.
	Sequential	Prefer to be given materials already organized by someone else: a syllabus, lesson plan …etc.
Global–Particular	Global	Understand the "big picture" and attend to an idea as a whole.
	Particular	Alert to details and discrete units, and use bottom-up processing of information.
Inductive-Deductive	Inductive	Form hypotheses, then try them out or test them.
	Deductive	Study the grammatical rules, then apply them to individual examples.
		Prefer to get these rules either from the teacher or from further references.
Synthetic–Analytic	Synthetic	Like to build new wholes out of old pieces.
	Analytic	Like to deconstruct wholes into parts to understand their componental structures.
Analogue-Digital	Analogue	Learn better when using conceptual links (such as metaphors and analogies) among units and their meanings.
		Learn better when the new element is meaningfully contextualized.
	Digital	Prefer direct associations and have a literal understanding of meaning.
Concrete–Abstract	Concrete	Learn better when real materials and examples are used.
	Abstract	Accept theories well.
Leveling–Sharpening	Leveling	Combine together different information that come from different sources.
	Sharpening	Look for distinctions among items.
		Notice differences and write well when the assignment allows them to use their abilities to describe differences.
Impulsive–Reflective	Impulsive	Think and respond simultaneously.
		Finish their assignments quickly but with no much accuracy.
	Reflective	Think, then respond.
		Show deeper levels of thinking.

The E&L Construct differs from the other models due to its flexibility and distinctiveness. Unlike the others, this model is not entirely polar in its nature. Instead, it allows the combination of multiple attributes from both poles (Riding & Cheema, 1991; Ehrman, Leaver, & Oxford, 2003). In other words, as other models only accept the "either … or" rule, each scale of the E&L Construct

is a continuum in its own. For instance, people, as Leaver, Ehrman & Shekhtman (2005) explain, are not entirely field-dependent nor field-independent, they could be anywhere in between. However, being more field-dependent and less-field-independent still means that people process information differently from those who are the opposite. Thus, this construct is worth considering when planning, delivering and evaluating students' progress.

Readers of the above description of the E & L Construct can intuitively notice that all of the ten scales fall under another umbrella scale. The larger scale is made up of two poles: *Synoptic* and *Ectenic* (Leaver, Ehrman & Shekhtman, 2005). *Synoptic* learning relies on students' unconscious control over the language, whereas *Ectenic* learning occurs under learners' consciousness (Skehan, 1998). The following figure illustrates how each scale contains a trait from each pole:
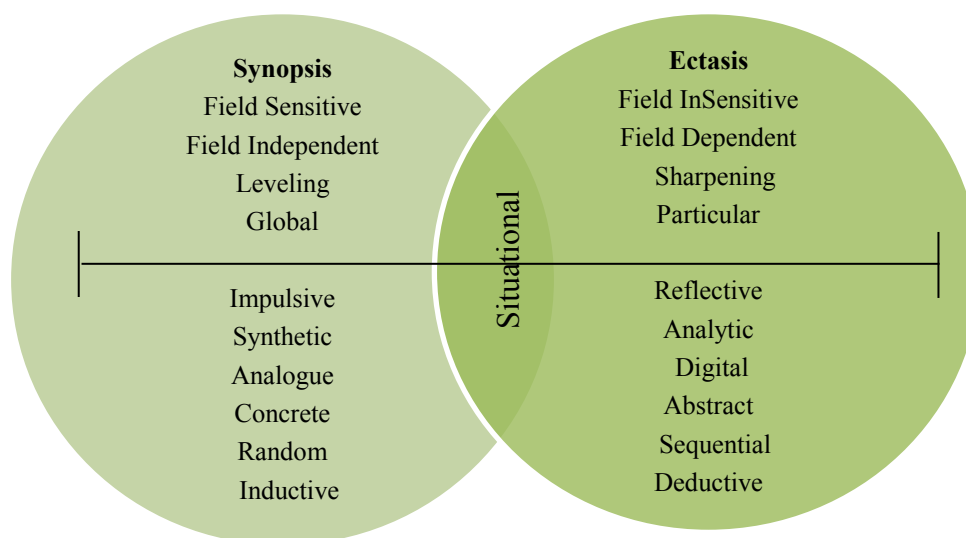

Figure 1 E & L Scales Classified into Synoptic and Ectenic Traits

2.4 Why Altering the Way Grammar is taught?
Over the years, grammar teaching has gone through a few changes; from form-focused to meaning-focused instruction, from accuracy to fluency and so forth (Larsen-Freeman, 2000). From the 1840s to the 1940s, advocates of the Grammar Translation Method emphasized the importance of the explicit teaching of grammar rules. At that time, teaching was accomplished by giving students the grammatical rules deductively and then requiring them to apply these rules to individual examples. Later on, with the emergence of new constructs, such as the Direct Method or Communicative Language Teaching, and up until today; the focus of grammar teaching shifted gradually from form-focused to meaning-focused instruction. This change in the means of teaching, as analyzed by Rama & Agulló (2012), was the result of a shift in the competence intended for students to achieve, from being declarative (conscious grammatical competence) to being more procedural (communicative competence).

What unifies all of the above teaching practices, whether they promote explicit or implicit knowledge, is that they are all language-focused approaches. However, as education is starting to lean more towards learner-centered kinds of learning, the situation should be looked at from a different angle. To put it in another way, based on the description of *Synoptic* learning, one can genuinely assume that *synoptic* students learn best when they pay an overt attention to grammatical rules or when they get exposed to conscious and controlled language knowledge; and that is the core of "Explicit Instruction" (Ellis, 2015; DeKeyser, 1998). To teach grammar explicitly, teachers employ linguistic metalanguage, that is the language used to describe a language (Smith, 1981). *Ectenic* learners, on the other hand, lean more towards "Implicit Instruction" through which they focus on meaning rather than form; without receiving much explanation of grammar rules (Ellis, 2015; DeKeyser, 1998). Meeting the needs of both types of students is something that can be done via the use of Differentiated Instruction.

2.5 Previous Studies on Differentiated Instruction
One criticism of much of the literature on Differentiated Instruction is that although the number of studies that explored the existence and nature of individual differences among language learners is significant (e.g., Castro & Peck, 2005; Dörnyei, 2014; Gardner, 2011; McNamara & Deane, 2006; Cook, 2013), there are only a few studies that have attempted to put Differentiated Instruction into practice.

Among the studies that investigated the effects of this teaching method on language learning is one conducted by Alavinia & Farhady (2012) in the Iranian context. participants in the study were divided into two groups: experimental and control. After setting a pretest, students in the experimental group were put into groups based on their multiple intelligences and styles of learning and were instructed accordingly, whereas students in the control group received regular unified instruction. The posttest results revealed that the performance of the two groups varied significantly, with the experimental group outperforming the other. Although these results are believed to add to the available body of literature, one drawback of this study is related to the researcher's application of Differentiated Instruction. As mentioned previously, Tomlinson (2001) emphasizes that Differentiated Instruction is significantly different from Individualized Instruction in the sense that the former is more about the flexible grouping of learners whereas the latter is mainly about putting students in fixed groups. Based on this description of Differentiated Instruction, one can argue that what Alavinia & Farhady (2012) investigated in their study is more like Individualized Instruction directed to fixed groups rather than differentiation.

In another study with a more systematic methodology, Paredes (2017) examined the effects of Differentiated Instruction on students' learning of vocabulary, grammar and reading using differentiated strategies instead of fixed intelligence-based grouping, as in the previous study. Using pre- and post- standardized tests to assess students' progress, the results showed that students' performance has significantly improved after the experiment. What is intriguing about this study, though, is the fact that the duration of the intervention part was not declared. Nonetheless, considering that the researcher used standardized tests to assess students' performance, the duration of intervention must have been long enough to make the improvement worth mentioning.

In the Saudi context, the number of studies that investigated the notion of Differentiated instruction is limited. A study conducted by Al-Subaiei (2017) at King Abdulaziz University revealed that teachers face a great deal of challenges in Preparatory EFL classrooms where students' diversity is believed to be high. Another study conducted by Alghamdi & Alnowaiser (2017) reveals that teachers at the same site are well-aware of learners' variance. Teachers in their study claimed to use various techniques, which according to the researchers belong to Differentiated Instruction. However, a couple of classroom observations conducted by the researchers revealed that teachers' use of these strategies was somehow limited.

In an attempt to investigate the effects of Differentiated Instruction on vocabulary and grammar, Siddiqui & Alghamdi (2017) applied three strategies of differentiation on low achiever students in remedial classes. The strategies used were varied instruction, flexible grouping and differentiated content. To measure the effect of these strategies, the researchers had students sit a pretest, attend remedial classes for ten weeks and then take a posttest. The results of their study revealed that students' performance has significantly improved. There are some notes, however, that should be mentioned about their study. With the presence of two independent, yet confounding, variables, it is hard to tell whether the improvement occurred because of the differentiation or because of the remedial classes. To solve this confounding variables issue, the researchers should have had a control group. The control group should undergo regular remedial sessions where the strategies mentioned above are not implemented. Another issue with the study is its insufficient definition of some of the main constructs involved. With a concept as general as Differentiated Instruction, it is better to identify and define the central point from which the subject matter is to be approached. Tomlinson (2014), for example, has identified three starting points for differentiation; students' readiness, interests, and learning profiles. Defining the base of differentiation is very important; it would inform the current body of literature on the three areas mentioned.

3. Methodology
3.1 Study Design and Paradigm
This study does not attend to a single method of data collection. Therefore, it can be argued that the philosophical paradigm followed here is more related to *Pragmatism*; which, according to Creswell (2013), emphasizes the complete investigation of a subject matter regardless of the method used. To achieve the purpose of this study and to better answer the research questions, the instruments used are believed to combine some features of two research paradigms: *Positivism* and *Interpretivism*.

Positivism proposes that reality is fixed, unchangeable, value-free and independent of the observer (Healy & Perry, 2000). The main approach to *Positivism* is the experiment; which, as defined by Trochim, Donnelly & Arora (2015), is the attempt to understand a particular phenomenon via direct manipulation of variables and observation. According to Hussain, Elyas, & Nasseef (2013), empirical experiments are central to the *positivist* paradigm; they provide clear, precise, rigorous and generalizable information about the subject matter. In this study, the first research question will be answered subsequent to a classroom experiment in which Differentiated Instruction functions as an independent variable. The answer to this question revolves around one reality; either "yes" or "no."

Interpretivism, on the contrary, is constructed on the assumption that reality does not only come in one objective form. Instead, there are many realities created by individuals who experience the phenomenon (Krauss & Putra, 2005). In other words, the best way to understand a specific situation is to get immersed and involved in it. Thus, to answer second research question, an *Interpretive* method of data collection is to be utilized to gain rich and elaborate data. By interviewing the participants, it is one of the aims of this study to understand the different facets of Differentiated Instruction's reality.

3.2 Procedures of the Study

Since the population of the study is female preparatory year students at King Abdul-Aziz University in the academic year of 2017-2018, an ethical approval to conduct the experiment during the third and fourth modules was requested from the Vice-Dean of the ELI women's campus. After getting the approval, data collection and analysis went through four stages:

a. Pre-experimental stage

At this stage, four ELI-102 sections (with approximately 28 newly-admitted students in each) were randomly chosen as possible candidates for the study groups: experimental and control. Students in all groups sat a pretest at the beginning of the fourth module, that is an achievement test taken from previous exams. The purpose of this test was to select two sections in which students are homogeneous and comparable.

b. Experimental stage

Both groups, then, received a different kind of grammar instruction. The experimental group, taught by the researcher, received differentiated grammar instruction in light of their cognitive needs. The intervention sessions lasted for three weeks, twice-weekly, until the mid-module exam. Meanwhile, the control group received traditional grammar instruction by their own teacher.

c. Post-experimental stage

At the end of week 3, students in the two groups took a posttest, which is another achievement test. Once the test was taken, students' results were compared to each other as well as to the pre-test results. The total number of students who attended most of the sessions and took the pre- and post- tests was found to be 20 in the experimental group and 22 in the control. As a result, two students from the control group were randomly excluded.

d. Reflective stage

At this point of the study, six students from the experimental group participated in open-ended one-to-one interviews through which they were asked to reflect on their own learning experience. The interview questions tapped on the perceived usefulness of the intervention.

3.3 Means of Data Analysis

To analyze the data related to the first research question, three types of tests were run using SPSS. The first is Levene's test of homogeneity used to eliminate the possible occurrence of any significant differences between the control and experimental groups. The second is Mann-Whitney U which was run subsequent to the administration of the posttest to compare the results of students in the experimental group to the results of those in the control group. The third test, which is

Wilcoxon signed-rank, was performed to detect any significant difference between the results of students before and after the experiment as shown in *Table 2*. These non-parametric tests were chosen because students' number in each section was less than thirty (Barnes & Lewin, 2005).

Table 2. *Tests Used to Analyze Quantitative Data*

Experimental group		Control group		
Pretest	Posttest	Pretest	Posttest	Test
●		●		Levene's homogeneity test
	●		●	Mann-Whitney U
●	●			Wilcoxon signed-rank

The data collected from the interviews were analyzed thematically. The analysis went through a few stages: examination of data, recording recurrent patterns, grouping of ideas and deducing general themes.

3.4 Participants
The course chosen was an EFL undergraduate course entitled ELI-102, offered by the English Language Institute of King Abdul-Aziz University in the academic year of 2017-2018. This course comes the second in a series of four courses given to the foundation-year students. Most of those attending it are high-school graduates between 18 and 25 years of age. The estimated language proficiency level of them is A2 on the Common European Framework. Other characteristics of the participants, as to their homogeneity level and so forth, will be embedded in the following parts.

3.5 How to Differentiate Grammar Lessons in Light of the E&L Construct
The content of the English Language courses at King Abdul-Aziz University is highly structured. At the beginning of any course, teachers are usually given instructional packages where everything related to the learning objectives, skills, subskills, lists of vocabulary and grammar rules… etc. is made clear to follow. In order to properly differentiate a grammar lesson based on the E&L Construct, it was of great importance to design detailed lesson plans in which all class activities and teachers' practices are explained.

A critical key to Differentiated Instruction is responding to as many learning preferences as possible throughout the lesson. Nonetheless, that does not imply that there is a single way of matching instruction to the preferences of all students' at a time (Tomlinson, 2001). Therefore, the process of differentiation was synchronized with the different parts of the lesson; starting from the moment the grammar rule was introduced all the way until students were expected to show evidence of their learning.

4. Results of the study
4.1 Results related to the First Research Question:
RQ1. Does Differentiated Instruction in the light of the E&L Construct have any significant impact on students' grammar learning?
As mentioned earlier, four ELI-102 sections (with approximately 28 newly-admitted students in each) were randomly selected as possible experimental and control groups. Students in all groups

(A, B, C, D) sat a pretest at the beginning of the fourth module, an achievement mid-module test taken from previous exams. The results of this test showed that groups A and B are the best candidates to represent the study groups: experimental and control. As shown in *Table 3*, the P-value > .05 confirms that the assumption of homogeneity of variance between the two groups is met (Loewen & Plonsky, 2016).

Table 3. *Levene's Test of Homogeneity of Variances*

Grade			
Levene Statistic	df1	df2	Sig.
.255	1	38	.617

The experimental group was then given a 3-week, twice-weekly differentiated grammar instruction. At the same time, the control group attended regular classes. By the end of week three, both groups took a posttest, an achievement grammar test that measures the same constructs the pre-test does. The following two parts include an analysis of the two tests used on the pre-post test results. Based on the results, decisions have been made about the acceptance or rejection of the study hypotheses mentioned below.

NH1: In a grammar achievement posttest, students in the experimental group **will not achieve significantly higher** ratings than those in the control group.
NH2: There will be **no significant difference** between the scores of students in the experimental group before and after the experiment.
The alternative hypotheses, on the other hand, state that:
AH1: In a grammar achievement test, students in the experimental group **will achieve significantly higher ratings** than those in the control group.
AH2: There will be **a significant difference** between the scores of students in the experimental group before and after the experiment.

4.1.1 Results Related to the First Hypothesis:
To check whether the first null hypothesis is to be verified or not, Mann-Whitney Test was used to detect any significant difference between the post-test results of students in the experimental group and their counterparts in the control group.

Table 4. *Mann-Whitney Test*

		Ranks		
	Group	**N**	**Mean Rank**	**Sum of Ranks**
Grade	Exp.	20	21.23	424.50
	Con.	20	19.78	395.50
	Total	40		

Table 5. *Test Statistics for Mann-Whitney Test*

	Grade
Mann-Whitney U	185.500
Wilcoxon W	395.500
Z	-.394

Asymp. Sig. (2-tailed)	.694
Exact Sig. [2*(1-tailed Sig.)]	.698b

As shown in *Table 4*, students in the experimental group scored higher ratings (with a mean of 21.23) than those in the control group. However, the difference between the two groups, as *Table 5* suggests, is not significant since the P-value (.694) is more than (0.05). From this data, it can be concluded that this study fails to reject the NH1.

4.1.2 Results Related to the Second Hypothesis:
To check if the second Null Hypothesis is to be verified or not, Wilcoxon Signed Ranks Test was used to detect any significant difference between the pre- and post-test scores of students in the experimental group.

Table 6. *Wilcoxon Signed Ranks Test*

		N	Mean Rank	Sum of Ranks
Posttest – Pretest	Negative Ranks	1a	3.00	3.00
	Positive Ranks	18b	10.39	187.00
	Ties	1c		
	Total	20		
a. Posttest < Pretest				
b. Posttest > Pretest				
c. Posttest = Pretest				

Table 7. Test Statistics for Wilcoxon Signed Ranks Test

	Posttest – Pretest
Z	-3.707b
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

As shown in *Table 7*, the p-value, which in this case is (.000), suggests the presence of a statistically significant difference in students' performance before and after the experiment. This, therefore, proves that NH2 should be rejected and the AH2 should be accepted.

4.2 Results Related to the Second Research Question
RQ2. How do participant students perceive the integration of Differentiated Instruction into language classrooms?

To answer the second research question, six students from the experimental group were randomly selected and interviewed. The interview questions required students to reflect on their experiences throughout the experiment in order to inspect the way they perceive Differentiated Instruction. From there, three over-arching themes were deduced: Increase of Learners' Motivation, Appropriateness of Access and Autonomy of Learners.

1. *Increased Motivation:*

When participants were asked about the advantages of the experiment, they described the learning environment as one where they felt involved. This involvement in learning, according to them, kept them alert and most importantly motivated throughout the six sessions. This was further indicated by one learner who stated the following:

> *"It has been a long time since I was in a class where my eyes stayed wide-open almost all the time. We had no time to get lazy; one moment we are guessing what the grammar rules would be like, or listening carefully to your (the researcher's) instruction, and the next moment we find ourselves involved in activities where everyone is expected to participate. I honestly had no time to sleep at all!" (Participant 1)*

Other learners went into details and identified with much accuracy what motivated them the most. For example, some indicated that is the group work that kept them motivated, while others pointed out that their motivation was high when they engaged in physical and interactive simulation activities. The most intriguing response was from some students who added that they found the explicit instruction of rules and the simplified summaries of grammar very engaging.

2. Appropriateness of access
When the researchers asked the participants whether they were taught grammar appropriately and whether they prefer to learn it in another way, most of the responses came out positive. Some indicated that a remarkable feature of the current method is that they have had more than one chance to learn the lesson. One student, for example, stated the following: *"Whenever I felt I missed something or did not understand a point, I always found other opportunities to catch up on what I have missed" (Participant 2).*

3. Learners' individuality and autonomy:
The last theme that emerged from learners' responses was mainly related to one of the main principles of Differentiated Instruction; this principle states that students should sometimes be given the freedom of choice over the way they like to show evidence of their learning. In fact, learners in this study found the concept of "learning contracts" quite appealing. One of the respondents commented on the task list they were given at the end of the experiment by saying *"I enjoyed doing the task I chose when I did it the way I want" (Participant 2).* Expecting everyone to do the same tasks, as believed by students, limits what they can do and forces them to be all the same.

4. Discussion
To fully understand the usefulness of Differentiated Instruction, the instruments employed in this study are inspired by two theoretical paradigms: *Positivism* and *Interpretivism*. The *Positivist* data resulted from a classroom experiment answers the first research question, whereas the *Interpretivist* data gathered from one-to-one interviews with the participants answers the second. The following two parts discuss these two sets of data with regards to the previous research.

5.1 From a Positivist Point of View:
As mentioned earlier, the quantitative data collected before and after the experiment revealed that a 3-week, twice-weekly Differentiated Instruction resulted in a statistically significant change in

learners' performance in a grammar achievement test. However, when comparing the post-test scores of students in the experimental group to those in the control group, the results revealed that even though the formers achieved higher ratings than the laters, the difference between the two is not statistically significant.

The first part of these results, the one which says that instructing students based on their needs resulted in a significant improvement in their performance, is consistent with the results from the studies mentioned in the literature review (e,g. Alavinia & Farhady, 2012; Siddiqui & Alghamdi, 2017; Paredes, 2017). The second part, however, which dismisses the presence of a significant difference in performance between the experimental and control group, is not. This conflict can possibly be justified in a number of ways:

1. Experimental treatment diffusion: In a study that was conducted in the same site (Alghamdi & Alnowaiser, 2017), EFL teachers showed a great deal of familiarity and awareness of learners' variations. They also reported their use of some Differentiating strategies which later on was found by the researchers to be limited. This awareness from the part of the teachers might have resulted in an actual use of some of the Differentiated strategies in class. Consequently, students in the control group might have been exposed to some Differentiated Instruction. That might have impacted their performance in the post-test results.
2. Learners' attendance: Reviewing the attendance records of students in the experimental and control groups showed that the number of students' absences in the latter is significantly less than in the former. Thus, the high rate of learners' absence might have prevented them from achieving the expected outcomes.
3. History: Much to the researchers' surprise, students' in the control group had an unplanned revision session with their teacher before the posttest (which was one day before the mid-module exam), whereas students' in the experimental group did not. This revision might have had an influence on the results causing learners in the control group to achieve higher ratings than expected.
4. Method of assessment: for the purpose of fairness and equity when comparing students' performance in the two groups, the pre-post tests used were formal assessment measures taken from previous exams. Using differentiated methods of assessment, as the researchers anticipate, might be more accurate when tracing the change in students' performance. But then again, it would be difficult to compare learners' achievements in the two groups.

5.2 From an *Interpretivist* Point of View:
The second research question aimed at exploring the usefulness of Differentiated Instruction as perceived by participant learners. The overall interview results suggest that learners have positive attitudes towards differentiated classrooms. Their responses revolved around three themes: the increased motivation, appropriateness of access and individuality and autonomy.

In her book, The Differentiated Classroom, Tomlinson's (2014) argues that there are three reasons behind using Differentiated Instruction as a method of teaching; these include enhancing the efficiency of learning, increasing learners' motivation and allowing learners to have good access to the lesson. Surprisingly, two of the themes that emerged from learners' responses are

directly proving that application of Differentiated Instruction has successfully contributed to two of Tomlinson's reasons: increasing learners' motivation and enhancing the way they access the lesson. The third theme, however, is believed to be partially related to the efficacy of learning.

On another level, the first theme, which is the increase of learners' motivation, as one benefit of Differentiated Instruction, supports other researchers' argument that if the teacher adapted his or her instruction to meet students' variation, students' self-image as learners improves (Corazza, Gustin & Edelkind, 1995, as cited in Salvisberg, 2005; Dornyei, 2005). The increase in learners' motivation is an example of this improvement. Furthermore, the other themes, which are the appropriateness of access and learners' autonomy, confirm Baecher's et al. (2012) assertion that the purpose of differentiated instruction is neither to make heterogeneous groups homogeneous nor to transform the traditional learning environment completely. Instead, the core of Differentiated Instruction, as illustrated by Benjamin (2006), is the appreciation of rituals and varieties. Rituals refer to norms and expectations already existing, whereas varieties provide excitement and freedom of choice.

6. Conclusion

The current study sought to explore the effect of Differentiated Instruction, in light of learners' cognitive profiles, on female EFL foundation year students at King Abdul-Aziz University in the academic year of 2017-2018. Following a Pretest-posttest design, the first part aimed at exploring the phenomena quantitatively from a *positivist* point of view. The second part, however, aimed at exploring the way learners perceive Differentiated Instruction through one-to-one interviews. Results of the first part of the study revealed that the application of Differentiated Instruction resulted in a significant difference between the pre-post results of students in the experimental group. However, when comparing the performance of students in the experimental group to their counterparts in the control group, the results revealed that the difference is not statistically significant. Furthermore, the qualitative results revealed that learners perceive the application of Differentiated Instruction in a positive way. Three themes were found to be recurrent in their responses: the increased motivation, appropriateness of access, and autonomy. Based on these findings, the following implications and recommendations are made.

6.1 Pedagogical Implications

Based on the findings of the current study, a group of implications was drawn to enhance the quality of language teaching and learning. First, Professional Development and Qualification Assurance Committees are recommended to consider Differentiated Instruction when designing professional programs and courses and when setting the criteria for evaluating teachers' performance in class. Another implication is to create planning circles where teachers can collaboratively design learning resources, in-class activities, and assignments that facilitate Differentiated Instruction. These circles are meant to form the base from which teachers can start adopting this method of teaching.

6.2 Limitations of the Study and Recommendations for Further Research

Generally speaking, the number of studies that investigated the effect of Differentiated Instruction on language learning is limited in number. Unlike others, this area of research needs further investigation in order to come up with more reliable results. It is important, at this point, to

highlight the limitations of the current study and write up some recommendations for future research.

1. Experimental treatment diffusion (discussed in Section 5.1.2.1): One possible explanation for the insignificant difference between the two groups is the fact that the treatment strategies might have been used with the control group as well. To solve this issue, it is important to control the variables directly by assigning one teacher (either the researcher or any teacher) to the two groups: experimental and control.
2. Time constraints: One of the main limitations of this study is the time restriction; three weeks of treatment might not be enough to create a significant effect. Future researchers are, thus, recommended to conduct studies in which treatment sessions last for longer periods of time.
3. Loss of participants: Even though the estimated number of students in each one of the two section was twenty-eight to thirty, it was difficult to get students to attend the sessions. Including larger samples, on the contrary, might be one way of solving this issue.

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