Examining Online Dynamic Assessment and Use of Cognitive Reading Comprehension Strategies among Iranian Male and Female ESP Students: Students' Attitudes in Focus

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Abstract

Dynamic Assessment (DA) is a novel revolution in the area of integrating language testing and language instruction. The Online Dynamic Assessment, a more recent development of DA which provides learners with automatic mediations online deserves to receive more attention from the teachers and test developers. The present survey intended to inspect the impacts of online DA on cognitive use of reading comprehension strategies among Iranian ESP students. In addition, the ESP students' attitudes towards online DA were investigated in this research. To achieve these objectives, 80 Ph.D. students of general psychology studying at Islamic Azad University, Najafabad Branch, Iran functioned as the population of the research. The selected respondents were then separated into two experimental groups (EGs) of males and females. After that, the questionnaire of cognitive strategies use was distributed among both groups. Afterwards, the online DA was run to teach reading psychological texts to both groups. In so doing, they all joined the online Big Blue Button virtual learning site prepared by the university. After teaching ten reading psychological texts, the cognitive strategies use questionnaire was re-administered along with the attitude questionnaire to uncover the impacts of the treatment and understand the perceptions of the subjects about the application of online DA. The gathered data received statistical analyses and the results displayed that the online DA had significant impacts on the use of cognitive reading strategies of both Iranian female and male ESP students. Moreover, the outcomes revealed that there was not a substantial difference amongst post-tests of both EGs. The findings of one sample t-test demonstrated that both groups presented a favorable attitude towards utilizing online DA. The implications and suggestions were provided at the end the study.

Keywords: attitude, online Dynamic Assessment, cognitive reading comprehension strategies

Introduction

The importance of reading in EFL/ESL context is absolutely undeniable. Reading is a vital skill and possibly the most significant one for L2 students to manifest their potentials in

academic settings (Gunnerud et al., 2022). Reading comprehension is the group of abilities that make the students to create mental representations of the texts. Reading skill is the main instrument for the improvement of learning success and experience (Soto et al., 2019). Hazzard (2016) asserts that reading skill causes an important assistance to the successes of the learners in doing their studies. By reading comprehension, the learners can gain the data needed to meet the requirements of their instructional tasks. Indeed, the capability to read is critical; therefore, the learning process of reading has a vital effect on attaining achievement in both studies and life (Suyitno, 2017).

As reading is regarded as a stage of written communications, effective understanding of a passage necessitates the readers to apply diverse cognitive strategies since comprehension of a passage makes the readers to utilize background familiarity and data to forecast what the passage may be about (Muijselaar et al. 2017). Likewise, Ramos (2018) asserts that reading should be regarded as a significant ingredient in the routine lives of people since it permits them to obtain and interpret knowledge and the essential data to comprehend their contexts.

According to Herbert et al. (2020), reading is a productive process by which the students exploit metacognitive and cognitive strategies to make sense of a text. At the time of facing comprehension problems, successful readers take immediate measures through managing their reading process cautiously. They are cognizant of their own cognitive and linguistic resources, and are able to direct their attention to the proper clues in forecasting, retaining, and organizing text information. These kinds of readers are strategic readers and their reading behaviors are referred to as strategic reading (Fraser et al., 2021). Strategic readers are conscious of the nature of the problems, its likely solutions, and accessible resources to assess what works better. Learning of strategic reading hinges on the improvement of metacognitive and cognitive abilities.

Cognitive strategies are mental processes or procedures for reaching specific cognitive goals. Cognitive strategies refer to how to learn, how to recall, and how to transfer thoughts analytically and reflexively (Suyitno, 2017). Different cognitive strategies can be used to make reading texts easier to understand. Asmara (2017) states that cognitive strategies help students comprehend the texts better. Examples of cognitive strategies are the skills of forecasting according to prior knowledge, utilizing statements to examine their comprehension, analyzing text organization via looking for particular patterns, and self-questioning (Oxford, 2016). Cognitive use of reading comprehension strategies can be influenced using DA.

DA has got importance for theorists and researchers recently. It is described as a technique that focuses on personal modifications and their consequences for teaching and entrenches treatment within the assessments procedures via containing proper forms of mediations which are needed to the individuals' present capabilities and following performances with the goal of promoting learners' enhancement (Shobeiry, 2021). DA concerns with the connection amongst instruction and assessment. More particularly, it emphasizes on both assessment product and process. It tries to change the learners' performances within testing through presenting materials to cause a better accomplishment level. The main objective of DA is improving students' performances within the assessment itself (Alonzo et al., 2023).

Based on Noels et al. (2019), DA is described as a process-centered method in which learning and assessment are regarded as inherently associated but not distinct. Contrasting to the traditional teaching approaches, DA is seen as future-based, process- concerned, interaction-oriented, and ZPD-based instructional method (Kazemi et al., 2020). DA embeds interactions in the structure of a test-intervene-retest method to psycho instructional assessments (Infante & Poehner, 2019). According to Pileh Roud and Hidri (2021), the interactions between instructors and students are pivotal in this procedure of assessments because it echoes the gaps amongst current knowledge and possible knowledge that pupils can learn. DA is considered as a dynamic method that incorporates testing and teaching into a distinct instructional treatment to develop learning via supplying appropriate sorts of intervention in the form of prompts and hints. Usually, DA is affected through the interaction amongst language teachers and L2 students (Ghahderijani et al., 2021).

Though numerous investigations were carried out in the field of DA in EFL settings, its impacts on Iranian ESP students' cognitive reading strategies were not examined. This gap was a motivating factor for the researchers to attempt to unravel the influences of online DA on applying cognitive reading strategies among Iranian male ESP students. As the second objective, the researchers intended to uncover the impacts of online DA on the use of cognitive reading strategies among Iranian female ESP students. Eventually, for the last objective, the views of the ESP students were sought regarding the employment of online DA in ESP classes.

Review of the Literature

DA is rather a novel construct in the teaching language process with the chief goal of incorporating teaching and assessment programs (Bakhtiarvand & Tabatabaei, 2014). DA is planned to examine how learners reply the instruction within the assessment procedures. DA has a principal role in teaching language that leads to academic accomplishment of the students (Mohammadi & Babaii, 2022). DA takes into account the developing processes of the students within the teaching procedure that is rooted in the Zone of Proximal Development (ZPD) theory that rests on two significant, interconnected concepts: internalization and mediation (Shobeiry, 2021). According to the Sociocultural Theory of Mind (SCT), students' awareness to the assistance or mediation that is sensitive to their present abilities shows cognitive purposes that have not yet been completely enhanced. Furthermore, suitable mediation allows people to surpass their autonomous performances, and this in turn causes more development (Vygotsky, 1998).

Though DA has grounded in Vygotsky's perception of the ZPD, Vygotsky himself did not apply the DA word in expressing his ideas on the cultural improvement of the individuals nor in arguing his thoughts on the significance of differentiating amongst prognostic and diagnostic testing in the schools and in the workshop contexts (Minakova et al., 2020). Alonzo et al. (2021) defined DA as the procedures which its outcomes take into consideration the findings of the interventions. In this intervention, the examiners teach the examinees how to conduct successfully on singular questions or on the exam as a whole. The last score can be a learning score reflecting the differences amongst pre-tests and post-tests scores, or it can be the scores on the post-tests regarded alone.

Considering DA and statistical-oriented assessments, Grigorenko and Sternberg (2002) pointed out that several working within the DA paradigms have compared their approaches to what they mean to static assessments that follow more conventional assessment processes, particularly those related with summative assessments. Based on Grigorenko and Sternberg (2002), in static assessments, the examiners present items, one at a time or at the same time, and the examinees are required to answer to these items sequentially, without feedbacks or interventions of any type. At some points in time after the exam is finished, the examinees usually receive the only feedbacks they want to get. By that time, the examinees study for one or more future exams. Since DA is grounded in the ZPD, it argues that any assessments that cannot evaluate the extent to which the students' performances are changeable are not complete. On the other hand, the conventional statistically-oriented assessments are grounded in psychometric principles and consider changes in the students' performances within the running of the assessments as a danger to these rules, in particular, test reliability (Hannigan et al., 2022).

Using DA may help ESP and EFL students use more cognitive reading strategies in reading passages. Metacognitive and cognitive strategies are the two main categories of reading strategies. Cognitive strategies are thought of as a mental process that deals straightly with the information processing needed to learn, specifically for gathering, storing, retrieving, or using information (Idris et al., 2022). They are more constrained to specific educational goals and require more direct interaction with the educational content itself. Cognitive techniques let learners process meanings in the target language consciously. These are direct language learning procedures (Ariffin et al., 2021). Zhang and Guo (2019) introduced "cognitive strategies" in reading as a set of strategies that are directly related to the target language and learners' world knowledge, which permit them to construct meaning from text and to carry out a certain task. Cognitive strategies according to them are translating, summarizing, predicting, connecting to the previous knowledge, utilizing grammatical points, and estimating meanings from the situations.

Generally, cognitive methods are categorised as bottom-up and top-down in studies on both L1 and L2 reading. The model of bottom-up is referred to as the "notion of common sense" by Goodman (1986). Reading is seen as a decoding process in which letters, phrases, vocabularies, and finally sentences are identified so as to understand their meanings. The top-down paradigm, on the other hand, regards reading as a dynamic "psychological predicting game" and encourages the collection of the fewest and the most fruitful parts from a book to make meaning of it (Anthonysamy, 2021). Top-down disproves the idea that reading is effective when letters are recognised as words and meaning is derived from these words. Contrarily, it presupposes that effective reading necessitates that readers create assumptions and expectations about the text's contents by linking the novel knowledge to what they have already known and by using the fewest linguistic cues as possible. It is further assumed that readers can sample the texts to determine if the hypotheses are correct or not (Rahmat, 2021).

Schema theory influences the top-down approach, emphasising the importance of the readers' prior knowledge in the reading process. According to this approach, readers employ both the texts and their prior knowledge to comprehend a section. As a result, interactions between background information and text are critical for efficient reading. Utami and Sugirin (2019) also noted that numerous processes occur in readers' minds during reading. Readers

employ pre-reading information to build predictions about the texts using top-down and bottom-up tactics.

Several experimental researches were conducted to examine the impacts of DA on English language learning. Fekri Pilehroud (2018) inspected the effect of online DA on listening and reading abilities in TOEFL. To this end, 185 participants attending TOEFL preparation courses in different language institutes in Tehran were chosen according to the convenient sampling procedure. A unique computer software program that could provide hints for doing original iBT reading (N = 16) and listening (N = 16) comprehension items was developed. The instrument consisted of five types of reading comprehension questions and six types listening comprehension questions. The computer software was capable of providing EFL learners with three sets of scores. The data analysis indicated a remarkable difference amongst actual and mediated scores of participants and better performances of subjects in mediated scores. There were also statistically noticeable differences in the actual and mediated score of subjects with various levels of listening and reading ability. The outcomes also indicated that online DA had constructive and substantial impacts on the improvement of EFL students' performances on the listening comprehension monologues and dialogues. Beneficial information concerning EFL learners' learning potential in reading and listening comprehension in general and in different question types in particular was provided by the results.

No discernible effects of DA were found on the metacognitive and cognitive methods exploited via EFL students in writing classes, according to Khodabakhshi et al. (2018). A mixed-method research was conducted to inspect the effects of interventionist and interactionist DA on language consciousness and the metacognitive strategies applied by the subjects. The results showed that DA increased respondents' language awareness levels without having any impact on how they used their metacognitive strategies during the learning process.

Rashidi and Bahadori Nejad (2018) investigated the usefulness and influence of DA on L2 writing abilities in Iranian EFL students. They chose 17 EFL students and divided them into two groups. The DA technique was then carried out in three stages: topic selection, idea generation, and macro-revision. All of these stages were carried out with the help of the teacher and the students. The results showed that DA had a significant impact on participants' scores, enhanced their writing abilities, and that the experimental group's DA scores were largely greater than the scores of the control group.

Ebadi and Rahimi (2019) used an online DA programme to evaluate the effects of DA on the development of writing skills in Iranian IELTS students. The researchers also performed semi-structured interviews at the end of the training to assess the participants' attitudes towards the DA intervention. The obtained results demonstrated a significant improvement in the students' writing proficiency in terms of coherence and cohesiveness, lexicon, task achievement, and grammatical accuracy and range. Furthermore, the interview results suggested that the students had a good perspective regarding the efficiency of DA in the development of their writing skills.

Rezaee et al. (2019) sought to inspect whether informed Peer Dynamic Assessment (PDA could improve grammar knowledge of Iranian intermediate EFL students. To this end, 30 female learners, aged from 16 to 20, were chosen and accidentally assigned to two groups

of experimental and control. The experimental class was trained on the rules of PDA in two sessions to ascertain that they learn how to give their peers the needed feedbacks properly. Therefore, they were divided into groups of three so as to work on some grammatical structures inserted in their coursebook for 10 sessions. The control group was required to work on the same grammatical structures based on the conventional methods wherein feedbacks were provided unsystematically by the teachers. The outcomes indicated that there was a significant difference amongst the post-tests of the control and the experimental classes in favor of the experiment class.

Shobeiry (2021) examined the impacts of DA on Iranian IELTS students' metacognitive consciousness and reading comprehension. To do this study, 71 males and females at the advanced level were selected and divided into an EG (n=35) and a CG (n=36). The EG was instructed via applying the DA intervention during 10 weeks and the CG was trained by a traditional teaching technique and static assessment. The outcomes of the study indicated that the EG outstripped the EG in reading comprehension posttest. In addition, remarkable differences were observed amongst the metacognitive awareness for reading strategies of the EG and that of the control class.

Rezaee et al. (2022) looked at the effects of DA on EFL students' performance in the most face-threatening speech act, the complaint speech act. Using the convenience method of sampling, 33 students were chosen. They split into two groups: NDA (n = 15) and DA (n = 18), all of whom scored lower-intermediate on the Oxford Placement Test. A discourse completion exam (DCT) was given to the participants in both groups as a pretest and posttest. Throughout the course of five sessions, the students in the EG underwent a treatment during the DCT test. On the basis of the participants' responses, gradually developed pointers were provided. These indications were based on both literature and the opinions of experts. The findings of the investigation showed that DA participants outdid NDA participants by a significant margin. Also, the majority of the pupils in the DA group showed substantial improvement between the pretest and posttest. As predicted by Vygotsky, the Rasch model showed that the pupils' zigzagged changes were idiosyncratic.

To sum up, the review of a few investigations performed in the area of online DA shows the effectiveness of this method in assisting students to improve their English learning. Yet, little research exists investigating the impacts of using online DA on cognitive use of reading comprehension strategies among Iranian students. Therefore, this investigation aimed at investigating the effects of online DA on cognitive use of reading comprehension strategies among Iranian ESP students. Accordingly, this study aimed to find appropriate answers to the following questions:

RQ1. Does using online DA have any significant impact on the use of cognitive reading strategies among Iranian male ESP students?

RQ2. Does using online DA have any significant impact on the use of cognitive reading strategies among Iranian female ESP students?

RQ3. What are the attitudes of Iranian male and female ESP students concerning the application of online DA in ESP classes?

Methodology

Design of the Research

A two-group experiment design with no control group was used for the purpose of data collection phase. Although it is a research limitation, the reason was the lack of enough participants with similar characteristics to classify them in three groups (one control and two experimental).

Participants

First, eighty-three (40 males & 43 females) intermediate subjects were chosen from among 108 Ph.D. students of General psychology, Clinical psychology, Educational psychology, and Health psychology studying at Islamic Azad University, Najafabad Branch, Iran. Then, three of the female subjects were left out in order to have two equal groups both in number and gender. They had a two-credit course of ESP in which they were required to gain enough reading proficiency in comprehending technical texts in different fields of psychology. For selecting the homogeneous participants, a standardized test of homogeneity such as the Oxford Quick Placement Test (OQPT) was given and those whose scores fell between ±1 standard deviation from the mean were chosen. There are usually two groups of Ph.D. students who are yearly accepted in the mentioned fields of study (one group in each semester). The subjects of our research were both female and male students with the age range of 29 to 47 years. In fact, we had two groups in this research; the males and the females.

Data Collection Instruments

The OQPT was given to psychology Ph.D. students who had registered for university ESP classes in order to choose a homogeneous group of the respondents. To assess the respondents' overall competency, the OQPT was used. There are two sections with a total of 60 articles. 40 items were checked in part one, including five questions from the testing circumstances, fifteen questions from the cloze passages assessing pronouns, vocabulary, grammar, and prepositions, and completion items (20 questions). Twenty items made up section two of the exam: 10 were completion-style questions and 10 were questions based on cloze passages. The questions were all multiple-choice. Using the KR-21 method, the test's dependability, which is a high reliability index, was evaluated in a pilot study with 25 students who were similar to each other and came out to be.91.

The cognitive strategy use questionnaire developed by Bezci (1998) was used as the second instrument in this study. It was divided into two sections: the first collected background information, while the second examined the respondents' cognitive reading strategy utilisation when reading texts. In the second segment, 25 Likert-type items were used in three phases: pre-reading, while-reading, and post-reading. Cronbach's alpha (r=.82) was used to calculate the instrument's dependability. A group of English specialists also confirmed the correctness of this questionnaire. This instrument was used twice in the research: once as a pre-test and once as a post-test.

The third tool was an attitude questionnaire that was designed by the researchers to measure the attitude of ESP students towards the application of online DA in ESP classes. This questionnaire had 15 items about the application of the online DA in ESP classes. In the aforementioned tool, a Likert scale with five options was used to indicate how strongly the participants disagreed and agreed with the online DA. The responses provided by the

participants for each questionnaire item were then given numerical numbers. As a result, if a participant checked the box for completely agree, they received a score of 5. A numerical value of 4 was given for agree, 3 for neutral, 2 for disagree, and 1 for completely disagree. Cronbach's alpha (r=.81) was applied to evaluate the instrument's dependability.

Procedure

At the commencement of the research, the OQPT was administered to 108 psychology Ph.D. students taking an ESP course at the Islamic Azad University, Najafabad branch to make sure about their homogeneity in terms of proficiency level. Then, 80 intermediate ESP students were selected and assigned into two groups: female (n=40) and male (n=40). After that, the questionnaire of cognitive strategy use was given to both groups. In the instructional phase of the study, the online DA was run to teach reading psychological texts. In so doing, they all joined the online Big Blue Button virtual learning site prepared by the university. The teacher of the class briefed on the proper use of DA techniques. An eight-week long enrichment programme was used to improve the children' reading skills. The specific prompts' contents varied slightly from lesson to lesson because they had to be adjusted to the tasks' requirements, but they were often set up so that the implicit end of the scale informed students that there was a problem and the explicit end instructed them on how to fix it. When the researcher was certain that all of the other students were actively participating, she asked a student to respond to the first question. The mediator offered the first mediation (which is the most implicit one) to help the student if they were unable to respond correctly. If the issue persisted, the mediator changed the encounter to involve a different student providing the second prompt. The discussion went on with other pupils until the right responses were given. The engagement swiftly changed between the primary and secondary interactions as one student's query, difficulty, or remark prepared the way for another's input, even though the researcher might offer mediation in response to an individual. After administering the treatment as explained, the cognitive strategies use questionnaire was re-administered along with the attitude questionnaire to uncover the effects of the treatment and understand the about ESP students towards the application of online DA.

Data Analysis

The gathered data received statistical analyses according to the goals of the study. As we have two groups in this research, we used paired samples and independent samples t-tests to evaluate the impacts of the treatment on the use of cognitive reading strategies among Iranian ESP students. In addition, one sample t-test was utilized to analyze the data collected by administering the attitude questionnaire.

Results of the Study

For finding answers for the research questions a set of statistical procedures were conducted. For the first two research questions the gathered data were statistically analysed through paired-samples t-tests. The third question seeking for the attitudes of Iranian male and female ESP students concerning the application of online DA was answered via the statistical analyses collected from an adapted attitudinal questionnaire (Bezci, 1998). The

following sections give a complete account of statistical analyses conducted and the results obtained.

Impact of DA on the Use of Cognitive Reading Strategies

The first two research questions of the study were intended to investigate the possible impact of DA on Iranian ESP pupils' cognitive reading strategies. The collected data were statistically analysed through paired-samples t-test.

Table 1
Descriptive Statistics of Both Genders in the Cognitive Pre-tests

Groups	N	Mean	Std. Deviation	Std. Error Means
Male	40	58.90	18.81	2.97
Female	40	59.17	16.75	2.64

The descriptive data for both genders are depicted in table 1. The mean scores for the male and female groups are 58.90 and 59.17, respectively. Both genders' means appear to be almost equal. An independent samples t-test was used to determine how the two groups performed differently on the cognitive pre-test. Table 2 presents the outcomes.

Table 2
Inferential Statistics of Both Genders in the Cognitive Pre-tests

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	df	Sig. (2-tailed)	Mean Differences	Std. Error Differences	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.28	.59	.774	78	.45	-2.97	3.98	10.90	4.95
Equal variances not assumed			.774	76.97	.45	-2.97	3.98	10.90	4.95

The differences between the cognitive pre-tests of the two groups were not statistically significant, according to the results of the independent samples t-test in table 2 with Sig being .45, which is greater than 0.05. In effect, both genders performed similarly in the cognitive pre-test.

Table 3

Descriptive Statistics of Both Genders in the Cognitive Post-tests

	Group	N	Means	Std. Deviations	Std. Error Means
Scores	Male	40	97.72	19.44	3.07
	Female	40	96.02	19.34	3.05

The descriptive data for the cognitive post-tests for both genders are shown in Table 3. The average score for the male group is 97.72, while the average for the female group is 96.02. It appears that the cognitive post-tests for the two genders did not show any statistically significant differences.

Table 4

Inferential Statistics of Both Genders in the Cognitive Post-tests

	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	T	df	Sig. (2-tailed)	Mean Differences	Std. Error Differences	95% Confidence Interval of the Differences		
								Lower	Upper	
Equal variances assumed	.00	.93	.39	78	.69	1.70	4.33	-6.93	10.33	
Equal variances not assumed			.39	77.99	.69	1.70	4.33	-6.93	10.33	

Table 4 depicts that *Sig* (.69) is greater than 0.05, this implies that the variances amongst the two groups were not significant in the cognitive post-test. One can conclude that the treatment influenced using cognitive reading strategies of both genders equally.

Table 5

Paired Samples Inferential Statistics (Cognitive Pre and Post-tests of Each Gender)

		Paired Differences					t	df	Sig. (2-tailed)
		Means	Std. Deviations	Std. Error Means	95% Confidence Interval of the Differences				
					Lower	Upper			
Pair 1	Male pre/post	38.82	26.44	4.18	47.28	-30.36	9.28	39	.00
Pair 2	Female Pre/post	36.85	25.16	3.97	44.89	-28.80	9.26	39	.00

A paired samples t-test is conducted in Table 5 to compare the results of the male group's pre- and post-tests. As Sig (.00) is less than 0.05, the differences between the pre-test and post-test of this group are discernible. Furthermore, because Sig (.00) is less than 0.05,

the results of the second paired samples t-test show that there are significant differences between the pre-test and the post-test of the female group. We can draw the conclusion that both male and female Iranian ESP students significantly used cognitive reading strategies as a result of the online DA.

The Attitudes of Iranian ESP Students towards the Application of Online DA in ESP Classes

The third question seeking for the attitudes of Iranian male and female ESP students concerning the application of online DA was answered through the statistical analyses conducted on the collected data from an adapted attitudinal questionnaire (Bezci, 1998). Twenty-five Likert-type items were divided into three sections: "pre-reading," "while-reading," and "post-reading" in this questionnaire. The mean score of each questionnaire item was compared with the average value of the alternatives because each option on the Likert scale carried a point (Completely agree = 5, agree = 4, neutral = 3, disagree = 2, and completely disagree = 1). This would imply that respondents tended to agree with a statement in a questionnaire item if the mean score was higher than 3 in that item. A mean score of less than 3, however, showed the subjects' tendency to disagree with a statement mentioned in a questionnaire item.

Table 6

One-Sample Test of the Questionnaire

		Test Value = 0			
t	df	Sig. (2-tailed)	Mean Differences	95% Confidence Interval of the Differences	
				Lower	Upper
50.53	14	.00	4.184	4.00	4.36

Table 6 shows that the amount of statistic *T*-value is 50.53 (t=50.53), df=14, and the significance level is 0.00 (sig=0.00) which is smaller than 0.05. This implies that Iranian ESP students held favorable attitudes toward using online DA.

Discussion of the Findings

The researchers analyzed the data to address the first research question. The acquired results demonstrated an increase in the male online dynamic group's post-test mean score. The findings demonstrated that Iranian male students' usage of cognitive reading strategies was significantly influenced by the online DA. Consequently, the study's first null hypothesis—that using online DA has no discernible effect on Iranian male ESP students' use of cognitive reading strategies—is rejected.

Similar findings were found for the other question of the research, which suggested that the use of cognitive reading strategies by Iranian female students had improved as a result of using the online DA. There were substantial variances amongst the pre-test and post-test of the female group, according to the results of the second research question. As a result, the study's second null hypothesis—that using online DA has no discernible impact on Iranian female ESP students' use of cognitive reading strategies—is rejected. For answering the last research question "What are the attitudes of Iranian female and male ESP students

concerning the application of online DA in ESP classes?" a one sample t-test was used and its results indicated that both male and female Iranian ESP students presented a favorable attitude toward the use of online DA in ESP classes.

Our findings are consistent with those of Ebadi and Rahimi (2019), who investigated the effects of DA on academic IELTS students' writing competence enhancement. Their findings revealed a considerable improvement in the participants' writing abilities. Similarly, they suggested that the students had a positive attitude towards the DA since their writing proficiency improved. Moreover, our outcomes are indorsed by the Social Constructivism theory explaining teaching and learning as complex interactive social phenomena between teachers and students. Based on this theory, the teachers provide a social situation in which the learners can assemble or construct with others the knowledge necessary to solve the problems. According to this assumption, learning is a series of practical social experiences in which students learn by doing, collaborating, and reflecting with others.

Furthermore, our findings confirm the findings of Sharafi and Abbasnasab Sardareh (2016) who investigated the effects of DA on Iranian EFL learners' grammar acquisition and discovered that DA had a substantial effect on EFL students' learning of place and time prepositions. Furthermore, the findings of this study are consistent with those of Fekri Pilehroud (2018), who investigated the effects of online DA on TOEFL reading and listening comprehension abilities. Her findings revealed that online DA has a significant and favourable impact on the improvement of EFL students' listening and reading skills.

Moreover, the outcomes of the existing survey are in agreement with Ashraf et al. (2016) who examined the effects of electronic–based DA on Iranian EFL students' listening skill. Their research indicated that the electronic–based DA had significant effects on the students' listening skill. The outcomes of this investigation lend support to Vahid Dasjerdi (2016) who indicated that all of the participants in his research had a desirable opinion about DA on the development of their picture-cued writing tasks. Also, our investigation is supported by Babamorad et al. (2018) who examined the students' attitudes towards testing and teaching writing skill by Computerized Dynamic Assessment (CDA) and showed that all the learners presented a favorable attitude about implementing CDA in teaching writing. Moreover, Ebadi and Yari (2017) exhibited that students had optimistic attitudes towards DA and asserted that DA is really useful in prompting their word knowledge.

One reason for the obtained outcomes in our research can be attributed to the fact that DA can provide a plenty of information and it can tell teachers so much more about students' capabilities. DA displays the degree of knowledge within children; what they are capable to perform. It also suggests a starting point for instruction. It is more seamless- the assessment and the teaching are fully associated. Another important reason why the participants in this study outperformed in their post-tests can be attributed to the positive advantages of DA. Based on Derakhshan and Kordjazi (2015), DA is more realistic and it may reduce the students' test anxiety. Contrary to the conventional assessment that is named NDA, DA gives the testers a vital role because they have a neutral role and generate constructive correlation with the testees.

One more reason for the gained results can be attributed to using online learning. Online tools are used by a network of students in online learning, a learner-centered teaching approach, to speed up knowledge sharing outside of the confines of space and time. Self-

study and asynchronous interactions are combined in this strategy to promote learning, and it can be used to support learning in conventional on-campus instruction, distance learning, and continuing education. Students can conduct their studies with more freedom online because there are no time or space restrictions. These aspects of online education might be the reason of the experimental groups' better performances on the post-test.

Conclusion and Implications

This research examined the impacts of online DA on the use of cognitive reading strategies among Iranian female and male ESP students. The results indicated that using online DA produced positive impacts on cognitive reading strategies of Iranian ESP students. In addition, the outcomes demonstrated that the attitude of Iranian ESP students towards using online DA was positive.

Overall, the results of the existing survey support the beneficial influences of online DA on ESP students' cognitive reading techniques. Utilizing different DA procedures, such as computerized DA, is seen as a crucial first step in changing the paradigm of the teaching to the test movement to one where "testing to the teaching" is the movement's true objective, which is to assist students in learning something. Online DA can empower language learners to show those skills or capabilities that have already improved. In addition, mediation possibly activates the previous knowledge, increases consciousness, and aids active learning.

We can conclude that a DA approach to reading and other skills empowers the teachers to more precisely assess learners' reading and other skills, after recognizing the source of their mistakes provide them with needed assistance, and consequently, develop their reading, speaking, writing, and listening skills. Though DA can be incorporated into learning as part of instructional process, it can also supply substantial information about individual learners. DA can be an influential mechanism for assisting instructors to determine how their instruction should be changed for different students. Saritas Akyol and Karakaya (2021) state that DA can provide us with a model of how formative assessment can be integrated into the learning process and mixed with the purposes of summative assessment. It can be concluded that using DA is preferred over non-DA since it allows learners take part in the process of what they are performing and it gives them a role. In fact, this type of assessment engages pupils in the learning situation completely. Learners and their teachers have a good link with each other, and the goal is to assist learners to improve their learning level and increase their knowledge.

EFL students can profit most from DA, since if their awareness about the advantages of DA rise; it can increase their learning motivation. Since the outcomes of the current investigation demonstrated that online DA generated constructive impacts on improving ESP students' cognitive reading strategies. ESP and EFL students can take the most advantages from such procedures for developing their reading comprehension abilities. Consequently, ESP and EFL students need to be informed of the significance of online DA procedures.

The results of the study can also help English instructors to implement DA in their classes, recognize the weak points of their students, and provide mediation where and when required. The discoveries of this study can persuade instructors to apply interactive activities that result in a better grasping of L2 pragmatics for EFL students. Hence, integrating more ZPD-based activities in the EFL lessons can increase their own exact chance of a real

interaction. The ZPD-based activities are just more than the levels of what the students can perform by themselves, so these types of activities can challenge the students and consequently help them learn the language (Yusuk, 2018).

The syllabus designers who need to emphasise more flexibility can benefit from this research. In DA, the educational program's most important component is its students. Teachers may become the syllabus designers if the curricula do not meet the demands of the students. As a result, the curriculum should be sufficiently flexible to accommodate the needs of the pupils. By focusing on the needs of students in developing their reading skills, this research may encourage material designers to improve contents for English workshops and courses. It may also provide teachers with the opportunity to identify any areas that need improvement and make language courses more pertinent to the needs of the learners (Birjandi et al, 2013).

Limitations of the Research

Like other studies, the current one had some drawbacks and could not comprise all the related issues to the topic. The main drawback or limitation is referred to the small number of the respondents of the research which encompassed only 80 Iranian Ph.D. students; therefore, care must be taken if one wants to generalize the results to M.A and B.A students as well as high school and institute students. Future studies are offered to try to include more respondents that may affect the results reliability. The other limitation is that only phycology students were involved in this investigation that can reduce the generalizability of the results. Other studies can examine the influences of online DA on the students from other fields. This research was conducted on those students whose age range was between 29 to 47 years old; we cannot generalize the obtained results to other age ranges. Future studies should look at different ages and a wider variety of environments with various research designs, to see how far the benefits of online DA extend. Future research could be done within the current study's realm but with participants of different levels like upper-intermediate or advanced. Moreover, other researchers can use the same procedures of this study for other language skills or in EFL classes.

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Appendix: Cognitive Strategy Use Questionnaire
Name   last name   age   gender
Cognitive Strategy Use of Students for the Pre-Reading Phase
1. Reading the title and imagining what the text might be about.
always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me
2. Looking at illustrations/pictures and trying to guess how they relate to the text.
always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me
3. Reading over the text quickly to get the gist.
always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me
4. Reading the first line of every paragraph to understand what the text is about.
always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me
5. Thinking about previous knowledge on the topic of the text.

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

Cognitive Strategy Use of students for the While-reading Phase

6. Reading without looking up every unknown word in the dictionary

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

7. Using a dictionary for the important words

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

8. Guessing the meaning of a word from the context

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

9. Guessing the meaning of a word from the grammatical category

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

10. Remembering a new word by thinking of a situation in which the word might be used

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

11. Skipping words

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

12. Rereading a sentence

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

13. Considering the other sentences in the paragraph to figure out the meaning of a sentence

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

14. Reading without translating word-for- word

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

15. Having a picture of the events in the text in mind

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

16. Paying attention to words or phrases that show how the text is organized

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

17. Taking notes on the important points of the text

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

18. Making guesses about what will come next based on the information already given in the text

always true of me   usually true of me   sometimes true of me   rarely true of me   never true   of   me

19. Relating the text to background knowledge about the topic to remember important information

always true of me   usually true of me   sometimes true of me   rarely true of me   never true of me

Cognitive Strategy Use of Students for the Post-Reading Phase

20. Classifying the words according to their meanings

always true of me usually true of me sometimes true of me rarely true of me never true of me

21. Classifying the words according to their grammatical categories

always true of me usually true of me sometimes true of me rarely true of me never true of me

22. Summarizing the main ideas

always true of me usually true of me sometimes true of me rarely true of me never true of me

23. Rereading the text to remedy comprehension failures

always true of me usually true of me sometimes true of me rarely true of me never true of me

24. Rereading the text to remember the important points

always true of me usually true of me sometimes true of me rarely true of me never true of me