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**THE EFFECTS AND USEFULNESS OF BLENDING  
ASYNCHRONOUS ONLINE DISCUSSION WITH  
FACE-TO-FACE CLASSES ON STUDENTS' READING  
COMPREHENSION, PARTICIPATION AND LEARNING AT  
FIRST YEAR OF SECONDARY SCHOOL IN SAUDI ARABIA**

**By**

**Yahya Ali Qenaey**

A thesis submitted in fulfillment  
of the requirements for the degree of  
Doctor of Philosophy in Education

Faculty of Education and Social Work  
The University of Sydney

March 2014



## AUTHOR'S DECLARATION



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This is to certify that:

- I. this thesis comprises only my original work towards the Degree of Doctor of Philosophy
- II. due acknowledgement has been made in the text to all other material used
- III. the thesis does not exceed the word length for this degree.
- IV. no part of this work has been used for the award of another degree.
- V. this thesis meets the *University of Sydney's Human Research Ethics Committee (HREC)* requirements for the conduct of research.

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Date: 20.10.2014

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## **ABSTRACT**

This study examined the effects and usefulness of blending asynchronous online discussion (AOD) with face-to-face (FTF) reading classes on first-year Saudi Arabian secondary school students' Arabic reading comprehension, participation, interaction and learning processes.

A sequential mixed methodology approach was applied, including quantitative and qualitative research data collection and analysis. Two teachers and 64 students participated. The first part involved a quasi-experimental quantitative design with two groups to examine the impact of BL on students' comprehension scores. In the control group, 32 students participated in traditional FTF learning only. In contrast, 32 students in the experimental group participated in both FTF and AOD learning via 12 online group discussions over six weeks. Both groups were given the same pre-and post-comprehension tests. The second part involved qualitative semi-structured interviews with 16 students from the experimental, blended group and the two teachers. The third part involved quantitative and qualitative analysis of the AODs.

The main finding of this study was that students in the experimental BL group did not improve significantly more than those in the FTF group in overall comprehension post-test scores, or literal, inferential and evaluative comprehension sub-levels. However a comparison within groups revealed that the experimental BL group demonstrated a significant improvement in test scores for overall and all sub-levels of comprehension while students in the control, FTF group only improved significantly in overall and literal comprehension.

Overall, this study concludes that although there was no significant effect of blending AOD with FTF reading classes in terms of students' reading comprehension

compared to FTF learning, the integration of AOD design has the potential to benefit students' participation, learning about comprehension strategies, and interaction. However, there were some challenges that must be considered. A number of recommendations are provided for designing effective AOD activities to support teaching and learning in Arabic reading classes.

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## ABBREVIATIONS

Abbreviations	Description
AOD	Asynchronous Online Discussion
AODs	Asynchronous Online Discussions
BL	Blended Learning
D	D refers to the number of the Asynchronous Online Discussion, for example, D1 = Discussion 1 and D12 = Discussion 12
FTF	Face-to-Face Learning
G	Group
S	Student
SGF	Student Guide Forum refers to a subsection of the online discussion forums used in this study, in which teachers posed questions, provided instructions, guidelines, and reminders, and received feedback and questions from students
(S1, G3, D5)	The nomenclature used when quoting transcripts. This abbreviation refers to Student 1, Group 3, Discussion 5
T1	Teacher 1 is the Arabic teacher
T2	Teacher 2 is the IT teacher
ZPD	Zone of Proximal Development

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Overview**

The current study investigates the effects and contribution of blending asynchronous online discussion (AOD) with face-to-face (FTF) classes as a teaching and learning approach on Saudi secondary school students' Arabic reading comprehension achievement, learning processes, participation and interaction during class. The study aims also to explore secondary school students' and teachers' perceptions of the usefulness and challenges of this approach. Blended learning (BL) in this study is defined as a combination of traditional FTF learning and AOD learning approaches. This study examines the usefulness of such learning and teaching methods for students' Arabic reading skills and capabilities, which are important components of the Arabic language curriculum (Al-Khalifa, 2004; Ministry of Education, 2007, 2012, 2013). The Saudi Arabian educational curricula are undergoing major changes and developments in various areas, including the Arabic language. In addition, the Ministry of Education has introduced programs and projects to improve the educational curricula, and teaching and learning practices. These developments include: applying effective approaches to teaching and learning; developing new curricula; changing the roles of teachers, students and schools; and integrating various advanced educational technologies (Ministry of Education, 2012; Ministry of Education Website, 2013; Tatweer Project, 2013).

Particularly, through these developments, the Ministry of Education aims to achieve some strategic goals. The first aim is to improve students' outcomes, performances and general learning abilities and capabilities in different curriculum areas, including reading abilities and skills. Second, it proposes to improve the learning and teaching methods and practices by providing more opportunities to introduce student-centered approaches, in which



learners are active contributors (Tatweer Project, 2013). In parallel, the new curriculum aims to implement more interactive and collaborative approaches to learning, employing recent and advanced technology tools to enhance and support students' learning. The new vision focuses on developing essential skills to prepare students for productive work and success in their life (Ministry of Education, 2012; Ministry of Education Website, 2013; Tatweer Project, 2013).

There is widespread agreement among educators that teaching methods and content must be changed to meet the needs of this new generation (Baker, 2010). Educators, through integration of technology, should provide learners with more opportunities for student-centered learning (Quintana, Shin, Norris, & Soloway, 2006; Steel & Hudson, 2001), collaborating and communicating with teachers and peers (Stahl, Koschmann, & Suthers, 2006), expanding the learning time and place beyond the classroom environment (Venezky, 2004), fostering new literacy skills and critical thinking (Baker, 2010; Collins & Halverson, 2009; Leu Jr, 2002), and teaching them *how* to learn, not only *what* to learn (Barnes, Marateo, & Ferris, 2007).

As stated above, to achieve these goals, a new curriculum has been implemented and various educational technologies have been introduced in different levels of schools (*e.g.*, primary, intermediate and secondary). However, a review of the literature indicated that research on how BL could contribute to this development, is still limited, particularly at the school level. There is a need for research and empirical evidence to guide and accompany the new development programs and offer examples of how various online tools can contribute to the curriculum development and facilitate effective learning and teaching approaches in the Saudi Arabian context.

In this study, the researcher chose AOD as a teaching and learning mode for facilitating students' group discussion in Arabic reading classes. The usefulness of this teaching and learning method and its effects on students' reading comprehension and learning

processes are explored. Mastering reading comprehension and skills are critical for students' success in their academic outcomes as well as in their life (Al-Khalifa, 2004). In addition, the Ministry of Education in Saudi Arabia paid great attention to improving and developing the reading curriculum (Ministry of Education, 2007, 2012; Tatweer Project, 2013). It aims to support the reading curriculum and students' learning by introducing some effective teaching and learning approaches that can be facilitated by online learning tools.

Particularly, the new development program in Saudi Arabia aims to adopt active, interactive and collaborative approaches to support students' comprehension. One aim of the current study is to investigate how these changes could contribute to learning. Therefore, previous research was reviewed to outline teaching approaches proven to be effective in supporting students' reading comprehension. These successful approaches include explicit instruction of comprehension skills and strategies (Aghaie & Zhang, 2012; Cameron, 2009; Duke & Pearson, 2002; McLaughlin, 2012; Rajabi, Rezaei, & Afshari, 2013; Tierney & Readence, 2005), application of discussion and cooperative approaches (Applebee, Langer, Nystrand, & Gamoran, 2003; Cameron, 2009; Tierney & Readence, 2005), answering teacher questions (NICHD, 2000), and generating questions about a text (Dole, Duffy, Roehler, & Pearson, 1991; NICHD, 2000; Palincsar & Brown, 1984).

To explore the development of students' learning and comprehension, some of these approaches are combined and applied in this study and facilitated through the use of BL, specifically AOD. This method of interaction was chosen as previous studies suggested that the application of such a tool (AOD) can support student participation (Conklin, 2005; V. Jewell, 2005; Northrup, 2007; S. Yu, 2009). In addition, AOD provides an opportunity to expand a learning opportunity beyond the physical and time limitations of the classroom (Conklin, 2005; Northrup, 2007; Wu & Hiltz, 2004). It also enables all students to have more, and equal, chance and time to participate (Pena-Shaff, Altman, & Stephenson, 2005). The use

of online discussion supports the social construction of knowledge and sharing of ideas (Conklin, 2005; Grisham & Wolsey, 2006). However, although AOD has some advantages it may also pose some challenges, such as learners' feeling of isolation (Conklin, 2005; Krebs, 2004), difficulties in using and accessing technology (Hew, Cheung, & Ng, 2010) and students' experiencing a heavy workload (Hew et al., 2010; E. Murphy & Colema, 2004).

As stated above, there is a lack of studies that focus on the use of online learning at the secondary school level (U.S. Department of Education, 2009). Although many studies have investigated the use of online discussion in post-secondary education, only a few have examined its integration in secondary school contexts (Cheong & Cheung, 2008; Conklin, 2005; Jewell, 2005; Love, 2002; Northrup, 2007; Yu, 2009). Of the few studies that examined using online tools at the secondary school level, none investigated the integration of AOD on reading comprehension at the secondary school level in Saudi Arabia.

Therefore, this research is an attempt to address that gap by exploring the effectiveness of using group discussion accompanied with effective teaching approaches, facilitated through AOD tools at the secondary school level in Saudi Arabia. This study also contributes to the recent research in reading curriculum and aims to contribute to improvement of teaching and learning practice in general.

## **1.2 Statement of Problem**

Reading instruction is considered important and central for students' learning. Students spend most of their studying and learning time by reading (Irvan, Buehl, & Klemp, 2007), and obtaining information and knowledge in various forms and from different sources, including print or digital materials. Mastering reading skills helps learners to study and learn effectively and successfully in different content areas (Al-Khalifa, 2004; Karlin, 1978; Neufeld, 2005). In addition, reading skills are considered important for learners' success not only in an academic context but also for their life-long learning (Al-Khalifa, 2004).

Therefore, great attention must be given to teaching reading comprehension skills effectively while students are at school.

In Saudi Arabia, reading instruction is included at all levels of schooling, including primary, intermediate and secondary grades. However, based on the teaching experience of this researcher at the secondary school level and mentoring of pre-service teachers, on previous research carried out in some cases in Saudi Arabia (Al-Muntashiri, 2009; Alhaidari, 2006; Qenaey, 2008), and reports and documents published by the Ministry of Education (2007, 2012, 2013), there are some limitations in the typical FTF teaching of reading comprehension to students. These problems are compounded when teachers face difficulties and challenges in teaching in general and particularly teaching reading comprehension. A summary of some key issues follows. First, in FTF learning not all students have the opportunity to participate in discussion about a text as the duration of typical reading lessons is short, and learning is restricted to classroom time and not expanded beyond this environment. Second, textbooks and teachers are one of the main sources of information, thus limiting the interactive learning opportunities for students. Third, the use of interactive and collaborative forms of learning, and many-to-many communication tools is rarely supported in the typical FTF classroom environment. These limitations were one of the motivations for implementing the new plans for innovation and development across all Saudi Arabian education systems and curricula, including reading.

Evidence of the new Ministry of Education plans at work already exists. There have been some recent increases in the use of educational technology and Internet tools in various levels of education in Saudi Arabia, including secondary school level (Ministry of Education, 2011). In addition, the Saudi Government has introduced some e-tools and programs in the education system (Ministry of Education, 2011). However, as stated above, few studies have been conducted on the implementation of online learning, and specifically AODs at secondary

school level. The lack of research in this area makes it difficult to understand the potential and drawbacks of implementing AOD in teaching practice. Indeed, without sufficient empirical research, it will be difficult for educators and policy makers to effectively implement AOD in their practice.

In summary, the reasons for conducting this research include the need to improve learners' Arabic reading comprehension abilities, to address the limitations that teachers currently face in their teaching of reading comprehension, to provide more effective, collaborative and interactive teaching approaches in teaching reading comprehension, and to shift learning and teaching from teacher-centered to student-centered.

These aims could be achieved by taking advantage of the affordances of online group discussion. Implementation of online discussions could provide opportunities for various types of students' interaction. For example, in online discussions students have more time and opportunity to discuss, and respond to each other. These opportunities are more limited in FTF classes. In online settings learners are provided with flexible time for practicing collaborative work in which students are encouraged to read other's, postings and share their thoughts with peers, provide and seek support.

Online discussion also may have the potential to facilitate a student-centered learning approach in which students take more active roles and responsibilities in the learning process and in constructing their own knowledge by reading, posting, responding, discussing, sharing their thoughts, and articulating their own reflections. These affordances of online discussion - which are limited in FTF classes- could help in supporting students' learning and their reading comprehension.

Furthermore, this research provides empirical evidence to support the recent and current development and change in using technology in education, addressing the paucity of research in this area.

Therefore, the researcher investigates how the integration of AOD into FTF classes could support reading comprehension teaching and learning as well as address some of the limitations of current teaching practices.

### **1.3 Aims of the Study**

There are five main aims for conducting this study. The first aim is to explore the effectiveness of blending AOD with FTF reading classes on secondary school students' reading comprehension scores in comparison to FTF only classes. This aim is explored by comparing the reading comprehension test scores of BL versus FTF learning groups as well as comparing pre-test and post-test scores within groups. The second aim is to investigate how students participate in AOD about a reading from a set text. The third aim is to examine how students interact with others in AOD. The second and third aims are achieved through content analysis of students' AOD and students' semi-structured interviews. The fourth aim is to examine how teachers facilitate students' discussion. This aim is achieved by the content analysis of teachers' posts in AOD and semi-structured interviews. The fifth aim is to investigate students' and teachers' perceptions of integrating AOD in their reading classes. This aim is explored by analysing students' and teachers' answers to interview questions concerning their views on this form of teaching practice.

### **1.4 Research Questions**

In order to achieve the aims of this study, the following questions are formulated:

1. Do students who participate in AOD as a supplement to FTF learning perform better on reading comprehension tests compared with students who engage only in FTF learning?
2. Do students in each group (FTF and BL) demonstrate significant improvement in their reading comprehension scores from pre-test to post-test?
3. How do students participate in AOD about a reading from a set text?
4. How do students interact with others in AOD about a reading from a set text?
5. How do teachers facilitate students' comprehension during AOD about a reading from a set text?
6. What are the students' perceptions of the usefulness of using AOD on their learning and reading comprehension?
7. What are the teachers' perceptions of the usefulness of using AOD on teaching and learning in reading classes?

### **1.5 Definition of Terms**

***Social Constructivism Theory*** suggests that learners learn and construct their knowledge through social interaction with others. This theory is based on key principles of social interaction, internalisation, scaffolding and the Zone of Proximal Development (ZPD) (Vygotsky, 1978).

***Face-to-Face Learning (FTF)*** refers to traditional learning and teaching that requires the presence of students and teachers in the same place at the same time, such as in a classroom; otherwise known as synchronous learning. This term is used to differentiate online discussion from a FTF approach (Westwood, 2008).

***Discussion Forums (DF)*** refer to websites where learners can post messages, read and reply to messages posted by others. They involve individual messages and threads of related messages (Davis, 2009).

***Asynchronous Online Discussion (AOD)*** can be described as the involvement of various learners or groups in online discussions or conversations in which each member participates by posting messages and responding to others where the interaction does not occur in real time (Dawley, 2007; Watkins, 2005); also known as asynchronous learning.

***Blended Learning (BL)*** refers to a combination of FTF and online forms of teaching and learning. In this study it refers to a combination of FTF and AOD learning (Graham, 2006).

***Reading Comprehension*** refers to constructing and extracting meaning through interaction with texts (Snow, 2002). In this study, it is operationalised as involving three levels of comprehension: literal, inferential and evaluative reading. Each level involves some reading comprehension strategies that are used to comprehend the text. Literal comprehension involves strategies that help to extract and recall information mentioned directly in a text, such as identifying facts. In the inferential level of reading comprehension, the reader seeks a higher level of comprehension by obtaining meanings that are not directly stated in the text. At this level, various strategies can be applied, including interpretation, inference and prediction. In the evaluative level of comprehension, the reader judges and evaluates the text and its content by applying strategies such as distinguishing between facts and opinions (J. Almasi & Fullerton, 2012; Brassell & Rasinki, 2008; Day & Park, 2005; Duffy, 2009; Irvan et al., 2007; Karlin, 1978; Pearson & Johnson, 1972).

## **1.6 Significance of the Study**

The study is significant in a number of ways. Firstly, the study provides empirical evidence on the effects and contribution of blending AOD with FTF instruction on students' reading comprehension, participation, interaction and learning process. The findings of this study could help policy-makers understand how Internet-mediated learning can support teachers' practices as well as students' academic achievement and learning.



Valuable lessons may be learned regarding the affordances of AOD in the learning process. Such lessons may help to contribute to the recent change and development in teaching reading in Saudi Arabia to meet the Ministry of Education's goal and vision of supporting and improving students' learning and reading comprehension skills and abilities, as well as cultivating high levels of thinking and critical reading skills. The application of AOD to support FTF classes in this study has implications for educators, Arabic teachers, and course designers.

The study offers a practical example of how AOD may be designed and implemented in secondary school Arabic reading classes including their rationale, procedures, strategies, challenges and evaluation. This study can assist instructional designers who aim to introduce similar educational changes and improve the practice of teaching reading.

Secondly, the study contributes to the literature concerning how the use of AOD may facilitate students' comprehension, participation, interaction and learning in Arabic language reading. As stated earlier, there is a lack of studies that investigate the contribution of AOD on students' reading comprehension and their learning processes at the secondary school level and specifically in the Saudi context.

Thirdly, regarding the methodological significance, this study uses a mixed-methods design that includes quantitative and qualitative data collection tools and analyses, including the detailed analysis of students and teachers discussions in AOD. The use of such approaches and detailed investigation of the learning process strengthens the current research findings and provides in-depth understanding of the phenomena under investigation. In addition, new reading comprehension tests were developed for this study, which can be used by teachers and other researchers to assess students' comprehension in an Arabic context by using the three reading comprehension levels as a conceptual framework.

## **1.7 Research Methodology**

This study applied a sequential mixed-methods design including quantitative and qualitative data and analytical approaches. The quantitative approach involved a non-randomised quasi-experimental design involving two groups – FTF and BL. Sixty-four male secondary school students participated in this study, divided into 32 students in each group. Both groups were given pre- and post-comprehension tests to examine the effects of blending AOD with FTF learning on students' reading comprehension. To deeper understand the students' and teachers' perceptions of using AOD in teaching and learning in reading classes, semi-structured interviews were conducted with 16 students and two teachers who participated in AOD. Further, to obtain in-depth understanding of the effects and usefulness of using AOD, students' and teachers' contributions in AOD forums were collected and analysed.

## **1.8 Pedagogical Design**

Two main teaching approaches were applied in this study – FTF and BL. There was one control group of 32 students who experienced only FTF classes and one experimental group of 32 students who experienced FTF and AOD instruction. The FTF group received traditional instruction during typical 45-minute Arabic reading classes, where teachers taught from reading textbooks developed by the Ministry of Education in Saudi Arabia. In this group, teachers played a central role in the activities, and time was limited. Teachers used various teaching strategies, including activating prior knowledge, asking students to read in silence or aloud, asking students about the main ideas, new and difficult vocabulary, and making inferences from the text. Teachers also explained briefly some comprehension strategies during the FTF classes. These FTF instructions were prepared and planned by the teachers without intervention from the researcher. After the class, students were given

worksheets that included explicit explanations, models, examples and questions developed by the researcher and teacher, which focused on reading comprehension strategies. Students were required to read this worksheet and answer questions individually as traditional homework.

The BL group experienced the same FTF instructions and classes as students in the control FTF group described above. In addition, outside the FTF classes, they participated in AOD activities during and outside school time. These AOD activities were designed and developed by the researcher and teachers. This instruction included participating in small group AODs about the reading and strategies taught in FTF classes. Students participated a total of 35 minutes during school time and for 3 days of AOD over 12 discussions outside class time. During the AOD activity students received support through various teaching methods: (1) scaffolding students' learning by providing explicit instruction and examples of each comprehension strategy, the same as for both groups during class; (2) facilitating students' participation during AOD; (3) questioning students about the reading, focusing on reading comprehension levels and strategies – these questions were similar to those given to the FTF group for homework; (4) encouraging students to participate, interact with others, and ask questions about the text; and (5) providing feedback about the students' posts. The principles that guided the AOD design were based on various learning and comprehension theories, including social and cognitive constructivism, schema, metacognition, and transactional theories. These guiding principles included: (a) reading is an active and interactive process; (b) learners learn by actively constructing their own knowledge through social interaction with others as well as combining it with prior knowledge; (c) scaffolding is important to help students learn (d) explicit and direct instruction of comprehension strategies supports students' reading comprehension; and (e) group discussion is one of the most useful teaching approaches that helps to improve students' reading comprehension.

In summary, both groups received the same FTF classroom instruction, with similar explicit instructions, models, examples and questions focused on comprehension strategies. The two main differences between the groups are that: (1) the FTF group received the explicit instructions as homework and were required to answer the questions in a traditional way, *i.e.*, individually, compared with the BL group, who received the instructions and questions during AOD forums; and (2) only the BL group had the opportunity to participate in group discussion and interaction about the questions, and comprehension strategies more generally, through 12 AODs over six weeks.

## **1.9 Context of This Study**

This section focuses on issues related to teaching and learning in Arabic reading classes in Saudi Arabia. This description aims to assist the reader to understand the context of this research, focusing on the Saudi background, reading curriculum and teaching aims and methods.

### **1.9.1 Saudi Arabia**

Saudi Arabia is located in the southwest corner of Asia. Two coasts and numerous Arabic countries surround Saudi Arabia; the Red Sea to the west, Yemen and Oman to the south, the Arabian Gulf and the United Arab Emirates and Qatar to the east, and Jordan, Iraq and Kuwait to the north. According to recent statistics (2010), the total population of Saudi Arabia is approximately 29 million people (Central Department of Statistics and Information, 2013). Arabic, a Semitic language, is the mother tongue of the country and the official language of education, culture, media and other sectors. The Arabic language alphabet consists of 28 letters, with words written from right to left.

### 1.9.2 Reading curriculum and teaching methods

Teaching reading skills, abilities and strategies is an important part of the language curriculum in the Saudi Arabian educational system and are taught at all grade levels. Saudi Arabian school education consists of three levels: elementary (6 years, grades 1 to 6); intermediate (3 years, grades 7 to 9); and secondary (3 years, grades 10 to 12).

The Saudi language curriculum focuses on teaching various language skills. At elementary and intermediate level, integrated curriculum systems are applied in teaching language skills. The term ‘integrated curriculum system’ refers to making connections between various subjects to eliminate the traditional barriers between them. For example, Arabic language skills – such as reading, writing and speaking – should be taught as an integrated group of related skills, not as separate parts. Over two semesters a year, the language curriculum covers units that focus on language skills and abilities such as listening, speaking, writing, reading, linguistic knowledge and communication skills. In teaching language skills, including reading, teachers follow the textbooks and guidelines, which are provided, designed and prepared by the Ministry of Education in Saudi Arabia. All teachers in Saudi schools follow and use the same textbooks and teaching materials.

Regarding reading, which is the focus of this study, fundamental reading skills, abilities and strategies are taught in primary and intermediate school levels (grades 1–9). These skills involve recognition and decoding of sounds, letters and words, understanding and analysing written texts, applying different reading strategies, evaluating written text and information, applying search strategies, reading various types of texts and reading for different purposes. These abilities are taught in different grades following the official guidelines (Ministry of Education, 2007, 2013).

At the secondary school level of education, two main systems of language curriculum are taught including, *subject* and *course systems*. The first one is the traditional *subject system*

in which the Arabic language is divided into subjects that include reading, literature, Arabic language grammar, library and research, and rhetoric and criticism. Teaching Arabic reading involves various methods to achieve certain educational goals. At each level, students are given textbook readings that include lessons arranged into different topics suitable for each level. The aims of teaching reading in secondary school are to: develop students' ability to read accurately and with correct pronunciation; understand and comprehend the meaning of the text and distinguish main and secondary ideas; develop critical reading skills; enhance students' linguistic idioms and vocabulary; benefit from the writers' approach to writing; promote oral and written composition skills; expand students' experiences and knowledge; promote students' research skills and ability to use reference material and dictionaries; and encourage students to enjoy reading (Alshalan, 2008; Ministry of Education, 2008).

One of the traditional methods of teaching Arabic reading at the secondary level includes the following components:

- (a) Introducing the topic: the teacher prepares students for a new lesson by making a connection between the new lesson and a previous one. In addition, the teacher asks some questions related to the lesson. The aim of this process is to activate students' prior knowledge about the topic.
- (b) Silent reading: the students read silently in order to understand the text and prepare to answer the questions that will be asked by the teacher.
- (c) Asking students about general ideas and vocabulary involved in the text.
- (d) Explanations of some comprehension strategies, such as identifying main and sub-ideas of the text.
- (e) Ideal teacher reading: the teacher reads the lesson for the students accurately and clearly.
- (f) Student reading: students read and offer feedback.

- (g) Evaluation of student reading and understanding: the teacher assesses students' understanding and reading achievement. This can be done by listening to the students reading, asking some questions about the text, or summarising the lesson ideas in oral and written form (Alshalan, 2008; Ministry of Education, 2008).

In the second *course system* of curriculum at secondary level, language is divided into different courses focusing on various skills, sub-skills and abilities, including reading. Examples of reading skills and capabilities taught in language courses include reading literary texts, pre-reading process, critical and analytical reading, reading levels and strategies, and speed reading (Ministry of Education, 2012). The main difference between both systems is that in the subject system there is a separation between the language skills in which these skills are taught as separate subjects. In contrast, in the course system the language skills are integrated, linked and taught as a whole. In both systems, reading skills are included and taught.

One of the traditional teaching practices used in some FTF Arabic reading classes is a teacher-centered learning approach, similar to the approach described above. In such classes, teachers are responsible for leading class activities. The teacher is the dominant source of information while students play more passive roles in constructing their knowledge. Another aspect of typical FTF classes is that opportunities for collaboration and group discussion are limited, due to time restrictions as well as the large number of students in these classes. This traditional teaching and learning method has been recognised and criticised by the Saudi Ministry of Education (2012, 2007) and has led to the recent changes that aim to shift these teacher-centered methods towards more constructivist, interactive approaches.

Since the commencement of this study, much effort and development has been made by the Ministry of Education to improve and develop teaching and learning practices, specifically at primary and intermediate grade levels. The Ministry of Education's recent

projects, curricula and programs aim to move from the traditional teaching practice – in which the learner is passive – to more interactive, constructive and collaborative approaches. The new curriculum aims to solve the limitations of the traditional teaching and learning practice across all curriculum areas, including reading. The new programs apply student-centered pedagogic approaches to teaching to give students an opportunity to be active and construct their own knowledge. This gives teachers opportunities to apply new technology and teach students new comprehension skills and strategies (Ministry of Education, 2007). Thus, the current study is timely, especially at this stage of curriculum development. It could help to explain how the use of new online technology-based pedagogies, such as AOD, can support the ongoing development of new curricula and programs and provide a guide on how blending AOD with FTF learning can support constructivist, interactive and effective teaching and learning.

### **1.10 Organisation of this Thesis**

This thesis is organised into eleven chapters including (1) introduction, (2) theoretical framework, (3) literature review of previous research, (4) methodology, (5–9) results, (10) discussion, and (11) conclusion.

**(1) *Introduction chapter:*** In this chapter the main problem is stated and described, highlighting a lack of research in integrating AOD at the secondary school level in Saudi Arabia. A background of this study is provided, focusing on teaching Arabic reading at the secondary level. This chapter also states the main research purposes and questions that drive this study, along with definition of key concepts and terms.

**(2) *Theoretical framework:*** In this chapter various theoretical issues related to learning and teaching reading comprehension and BL are reviewed. These include: the use of social constructivism underpinning this study; reading theories and models such as schema, metacognition and transactional theories; definitions and levels of reading comprehension;



effective approaches to teaching reading comprehension; BL definitions, rationale, and options for teaching; levels and scaffolding; and AOD.

**(3) Literature review:** This chapter presents reviews of studies in the main areas related to the study including: (a) effective approaches to the teaching of reading comprehension; (b) application of online discussion in teaching reading comprehension; (c) methodological issues in previous research.

**(4) Methodology:** In this chapter, the methodological research design is presented. The methodological paradigm that underpins this study's design is described, along with research methods and approaches, data collection tools and procedures, data analysis and ethical considerations.

**(5–9) Results:** In the results chapters the major findings of the research are presented. These findings are divided into different chapters based on the research questions. Chapter 5 presents results of the reading comprehension tests, focusing on the effects of BL on reading comprehension achievement between and within groups (Questions 1 and 2). Chapter 6 presents the participation and interaction results (Q3 and Q4). Chapter 7 includes the teacher involvement results (Q5). Chapters 8 and 9 detail the results of interviews with students' and teachers' about their perceptions of using AOD (Q6 and Q7).

**(10) Discussion:** This chapter presents a discussion and explanations related to the implications of the empirical findings. It, also relates these findings to the previous research. This chapter is organised into sections based on the major issues related to the research questions.

**(11) Conclusion:** This chapter begins by restating the main findings of this research, then presents some implications and recommendations based on the research results. The contributions of this study are presented. The limitations of the research are also discussed.

## **CHAPTER TWO**

### **THEORETICAL FRAMEWORK**

This chapter presents the theoretical perspective and conceptual framework underpinning this study. As stated in the introduction, this study aims to explore the effects and usefulness of blending AOD and FTF instruction on students' reading comprehension, participation, interaction and learning processes at secondary school level. Therefore, this chapter highlights the main theories and key concepts related to teaching reading comprehension and the potential of using AOD to support FTF learning. The chapter consists of three main parts reviewing theories, definitions and concepts related to (a) teaching reading comprehension, reading and learning theories, (b) blended learning, and (c) online discussion. These issues and concepts are discussed through theoretical lenses and perspectives that shape the design and implementation of this research.

#### **2.1 Reading Comprehension**

Reading comprehension is a central concept in this research. Therefore, the first part of this chapter focuses on theoretical perspectives and concepts that are relevant to reading comprehension, including development of reading comprehension conceptualisation and the influence of various reading models and learning theories on such development. This is followed by a review of definitions and explanation of levels of reading comprehension. The last section focuses on some effective approaches and instruction for teaching reading comprehension. This review guided the researchers' decisions about the design of learning and teaching approaches and activities in reading classes for the experimental phase of the study.

### **2.1.1 Development of reading comprehension concept and teaching practice**

As the main purpose of this research is to explore how students' reading comprehension can be taught effectively, at the beginning of this study, it is important to review how reading comprehension conceptualisation and definitions have developed over recent decades. Over the past fifty years, the concept of reading comprehension has evolved from a concept that reading is a passive transfer of information from the text to the reader's mind to the idea that reading is an interactive, transactive and constructive process (Cairney, 1990; J. D. Cooper, 1993; Dole et al., 1991). This shift in reading perspectives has influenced current reading pedagogies.

The traditional perspective (pre-1960s) of reading assumed that reading is a passive process in which readers are required to acquire a set of hierarchically ordered sub-skills that lead to comprehension (Dole et al., 1991). Reading in this view focuses on the ability of decoding, word recognition and recalling literal information. From this perspective, comprehension is a direct result of decoding and oral fluency (Fielding & Pearson, 1994). This perspective was held by a number of reading specialists until the 1970s (J. D. Cooper, 1993). This traditional perspective of comprehension presents the confusion of equating word recognition with comprehension and underestimates the difficulty and complexity of comprehension (Catts, 2009). From this perspective, a reader is seen as passive in the reading process as information is transmitted from the text to the reader's mind. In this view, meaning is in the text and the reader's role is to reproduce this meaning (Cairney, 1990; Dole et al., 1991).

One model of reading that exemplifies the traditional perspective is the bottom-up model, which defines reading as a text-driven process that follows a linear order from recognition of letters, then words, sentences and finally understanding the sentence and passage meaning (P. Harris, Turbill, Fitzsimmons, & McKenzie, 2006; Manzo & Manzo,

1990). The traditional perspective of reading comprehension was influenced by behaviourism (that dominated until the 1960s), which emphasised: (a) application of a drill, practice and repetition approach of learning; (b) the aim of reading was to master isolated facts and skills; and (c) the reader passively received information from a text (Pearson, 1985; Taylor & MacKenne, 2008).

Since the 1960s, the emergence and development of various cognitive learning theories and reading models has challenged and criticised traditional perspectives and contributed to the shift to new perspectives and conceptualisation of reading comprehension (Cairney, 1990; J. D. Cooper, 1993; Dole et al., 1991; Taylor & MacKenne, 2008). This new perspective of reading comprehension went beyond the traditional model of reading comprehension and perceived reading as a complicated and complex activity (Catts, 2009). In this concept, reading is seen as a series of interactive processes in which the reader is actively involved in constructing meaning, and meaning is constructed through interaction and transaction between reader, text and context. A reader actively constructs meaning through interaction with a text by connecting their prior and existing knowledge to information in the text, by adopting and understanding comprehension strategies (Anderson & Pearson, 1984; Catts, 2009; Dole et al., 1991). From this perspective, the act of reading comprehension involves more than basic skills; it includes complex thought processes such as reasoning, synthesising, problem solving and interpretation (Catts, 2009).

This new perspective of reading was influenced by various reading models and theories, learning and linguistics theories (Dole et al., 1991; Pearson, 2009; Tracey & Morrow, 2006). The evolution of learning theories, including cognitive and constructivist theories, had a significant impact on thinking about reading (McInerney & McInerney, 2010; Pearson, 2009; Taylor & MacKenne, 2008; Tracey & Morrow, 2006; Vygotsky, 1978). The following section provides an overview about the influence of learning theories and reading

models on the development of conceptualising reading comprehension as well as on the teaching of reading.

Various learning theories have contributed to the development of reading comprehension concepts, including constructivist theories, which emphasise the active role of the learner in constructing knowledge and building their own understanding (McInerney & McInerney, 2010; Salkind & Rasmussen, 2008; Tam, 2000; Tracey & Morrow, 2006). Irrespective of the focus of individual theories, cognitive constructivists (Piaget, 1973; Bruner, 1969) and social constructivists (Vygotsky, 1978) agree that learners construct their own knowledge (C. Beck & Kosni, 2006; Huang, 2002). Based on constructivism, according to Ally (2008), learning should be active, meaningful, interactive and a collaborative process. This theory suggests that learners construct and build their own knowledge through making connections between new and prior knowledge and experiences (Killen, 2006; K. Moore, 2005).

One of the most influential constructivist theories in the reading field is social constructivism, which suggests that learners learn when they actively construct their own knowledge through involvement in social interaction with others (McInerney & McInerney, 2010; Powell & Kalina, 2009; Tracey & Morrow, 2006; Vygotsky, 1978). This theory includes the concept of the Zone of Proximal Development (ZPD), which is regarded as one of the most well-known ideas of Vygotsky's work (Verenikine, Vialle, & Lysaght, 2011), and one of the most important contributions to psychology and education (Meece, 1997). Vygotsky defines the ZPD as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). In order to support learners to complete tasks in their ZPD, students need appropriate guidance and scaffolding from more capable individuals (*e.g.*,

teachers and peers) (Lefrancois, 1991; Ormrod, 2011). From this theoretical perspective, successful learning can be achieved through the provision of opportunities for meaningful social interaction between learners and other individuals who are capable of giving assistance (Jarvis, 2005). In light of this theoretical stance, effective teaching practice appears within the ZPD, as it has the potential to further improve learners' development (Verenikine et al., 2011). Some applications of this social theory in teaching reading practice can be seen in such practices as shared reading, literature circles, classroom discussion approaches and provision of scaffolding (Tracey & Morrow, 2006).

Schema theory is a cognitive constructivist theory that contributed to the shift in thinking about comprehension (Pearson, 2009; Tracey & Morrow, 2006). Schema theory suggests that information and knowledge are organised and structured in mental structures called schema. Based on this theory, readers understand and comprehend text when they connect and bring their prior knowledge, culture and experiences (schema) to the text content and structure (R. C. Anderson & Pearson, 1984; Andreassen & Bråten, 2011; Armbruster, 1986; Dole et al., 1991; Gauthier, 2001; Pearson, 2009; Rosenblatt, 1994). This theory contributed to the shift in conceptualising reading comprehension by emphasising the active role of the reader in constructing meaning as well as emphasising the impact of existing knowledge or schemata of content, reading processes and text structure on the comprehension processes (An, 2013; Pearson, 2009; Tracey & Morrow, 2006).

Another influential reading theory that has impacted on conceptualisations of reading comprehension is transactional theory (Rosenblatt, 1978), which is an extension, or application of, schema theory to the practice of reading (Tracey & Morrow, 2006). This theory suggests that reading is a transaction between reader and text (J. D. Cooper, 1993; P. Harris et al., 2006; Pardo, 2004; Rosenblatt, 1994). This theory suggests that meaning does not reside in the text or in the reader's mind but emerges during the transaction between a

reader and text (Rosenblatt, 1994). This theory also emphasises the active role of the reader in meaning making.

In addition, the emergence of psycholinguistic theory had an effect on the concept and teaching of reading comprehension (J. D. Cooper, 1993; Dole et al., 1991; Pearson, 2009). This theory emphasises that reading is a linguistic process and that a reader uses their prior knowledge about the language and the world in deriving their thinking and understanding about a text (Tracey & Morrow, 2006). This theory is consistent with a constructivist perspective in which the reader is active in the reading process by utilising their previous information about language (*e.g.*, syntactic and semantic information) to predict, guess and reconstruct meaning from the written words (Goodman, 1969). This theory contributed to the shift from the traditional perspectives of reading to a view of the reader as an active participant in the reading process.

Metacognition is another concept associated with learning theories that had a powerful impact on the conceptualisation of reading comprehension and an impact on teaching reading in the classroom. This concept refers to readers' awareness and thinking about their own thinking (Schraw & Moshman, 1995) and emphasises the importance of teaching a reader to monitor and be aware of the reading comprehension strategies he or she uses. In this view, instructional strategies and approaches are key when teaching reading, such as explicit instruction, discussion about metacognitive strategies, modelling strategies, and guided-use to promote independent application of strategies (Pintrich, 2002; Tracey & Morrow, 2006). Literature reveals that metacognitive instruction is effective in teaching comprehension (Haller, Child, & Walberg, 1988).

In addition to the learning theories discussed above, reading models, including the top-down and interactive, have influenced a shift in conceptualisations as well as the teaching of reading. The top-down model suggests that a reader makes meaning by using their prior

knowledge and through interaction with text. The interactive model suggests that reading is an interactive, transactive and social process (P. Harris et al., 2006; Hudson, 1998; Manzo & Manzo, 1990).

Another model of literacy, including reading, was introduced by Freebody and Luke (1990), who view literacy as a social and cultural practice. This model provides four reading practices, or roles, in which successful readers engage: code breaker (cracking codes of text); text participants (constructing meaning with text); text user (working with purpose of texts); and text analyst (analysing text critically). These practices are influenced by various contexts and the culture in which the readers read (Freebody & Luke, 1990; P. Harris et al., 2006; Luke & Freebody, 1999).

The emergence of various learning and reading theories and models discussed above has impacted on the teaching and pedagogy of reading. For example, Dole et al. (1991) argued that the cognitive perspective of reading has influenced what should be taught and the delivery of instruction. Regarding what should be taught, this perspective emphasises the importance of teaching learners a set of strategies and to assist them to use these strategies to comprehend any text and build their metacognitive awareness. These strategies include determining importance, summarising information, drawing inference, generating questions, and monitoring comprehension. In terms of delivery of instruction, teaching practice changes from a 'drill-and-practice' model to a more constructive model with the adoption of explicit instruction. According to this view, the role of the teacher shifts from being a director to a mediator who assists and scaffolds students to be independent learners as well as helps them to understand the text, comprehension strategies and the reading process (Dole et al., 1991).

In summary, the shift and evolution of learning theories that impacted the conceptualisation of reading comprehension and teaching practice over recent decades includes the following perspectives about reading: (a) reading is a complex and complicated



activity (Catts, 2009; A. J. Harris & Sipay, 1979; Morris & Stewart-Dore, 1986); (b) reading is an active and interactive process (Cairney, 1990; J. D. Cooper, 1993; A. J. Harris & Sipay, 1979) and a transactive process (Duffy, 2009; Pardo, 2004); (c) the construction of meaning occurs through the interaction between reader, author and text (Snow, 2002); (d) a reader's prior knowledge plays an important and powerful role in reading comprehension (Catts, 2009; Hirsch, 2006; Lipson, 1982; Recht & Leslie, 1988); (e) mastering and understanding how comprehension strategies work and are applied plays an important role in the reading comprehension process (Dole et al., 1991; Pardo, 2004); (f) context and culture shape and influence the process of construction of meaning (Snow, 2002); and (g) construction of meaning occurs through social interaction with others and through receiving adequate support and scaffolding from others (Vygotsky, 1978). These shared perspectives about reading comprehension are reflected in various definitions as discussed below.

### **2.1.2 Definition of reading comprehension**

Reading comprehension is an important and central concept of this dissertation. In a general and broad overview, reading includes two main components: decoding and understanding of the meaning of a text (Hirsch, 2006; Karlin, 1978). Arguably both decoding and comprehending are important but the ultimate goal of reading is comprehending and understanding the meaning of a text (J. D. Cooper, 1993; Hirsch, 2006). In addition, meaning is considered an integral part of the reading process (Karlin, 1978).

There are various definitions of comprehension that have been provided by experts and researchers over the years (J. D. Cooper, 1993; Goodman, 1967; Pearson & Johnson, 1972; Snow, 2002; Thorndike, 1917). One of the earliest definitions is Thorndike's, suggesting that reading is reasoning and thinking (Thorndike, 1917). Goodman (1971) challenged the traditional conceptualisation of reading and defined it as a psycholinguistic process that begins with a linguistic surface representation encoded by a writer and ends with

the meaning, which the reader constructs. Goodman (1967) introduced the interactive nature of reading, stating that there is an essential interaction between language and thought in reading in which the author encodes thought as language and the reader decodes language as thought (Goodman, 1967). Later Pearson and Johnson (1972) defined reading comprehension as “building bridges between the new and known” (p. 24), emphasising the reader’s active role and the interactive process between the reader and writer. Similarly, Morris and Stewart-Dore (1986) defined reading comprehension as bringing background knowledge (*e.g.*, language structure, background of the topic, word meanings) to the page in order to get meaning from it and make predictions. From these definitions there is a clear emphasis on the active role of the reader in constructing meaning, the interactive nature of reading, and the importance of prior knowledge in the comprehension process. Meaning construction is considered the ultimate aim of all literacy instruction (Cooper, 1993).

In recent decades, a comprehensive definition was provided by the RAND Reading Study Group (2002), stating that the term ‘reading comprehension’ refers to “the process of simultaneously extracting and constructing meaning through interaction and involvement with written language” (Snow, 2002, p. 11). In this definition, extracting refers to working out how print represents words or translating the print to sound in an accurate way, while constructing, at the same time, refers to understanding the information presented in the text. Constructing meaning occurs by integrating new knowledge with prior information and experiences (Sweet & Snow, 2003).

Based on the RAND<sup>1</sup> reading study group’s definition, reading comprehension and meaning construction results from an interaction between the reader, text and reading activity (*e.g.*, the activity of decoding words and applying comprehension strategies). These three elements interplay within a particular sociocultural context, which impacts the overall reading

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<sup>1</sup> RAND refers to the Research and Development Corporation.

comprehension process (Abadiano & Turner, 2003; Pardo, 2004; Snow, 2002). From this perspective, constructing meaning is an interactive process in which learners interact with text, and use prior knowledge and cultural tools.

The definition of the RAND group provided above combines various models of reading including the bottom-up, top-down and interactive models. In addition, it emphasises the role of readers' prior knowledge and information presented in the text in comprehending texts. This definition is in line with different theories and models that emphasise: (a) that reading and learning is constructive (*e.g.*, constructivist theory) and the reader is active in knowledge construction; (b) the role of context and social interaction in learning (social constructivist theory); (c) the schemata theory and the role of prior knowledge; and (d) reading is a transaction between a reader, text, activity and context (transactional theory).

As this study is conducted in an Arabic language context, definitions and views of Arabic reading comprehension were explored to assess the alignment between new perspectives of reading, current learning and reading theories and teaching of reading in Saudi Arabia. Al-Khalifa (2004) compared old perspectives of reading with more recent perspectives, stating that the old understanding of reading was based on decoding skills in which the teacher's attention focused on basic skills, *e.g.*, asking students to read (decode) the texts (words) with less attention given to the ability of comprehending the text. According to this author, this old understanding is still perceived and upheld by a number of teachers. However, Al-Khalifa (2004) and Madkor (2007) provided a recent definition of reading from the Saudi Arabian context, referring to it as a combination of various skills including recognising and decoding words, understanding and evaluating the text, connecting the readers' prior knowledge to the written language, expanding experiences and applying them to daily life, solving problems and enjoying reading.

Madkor (2007) emphasised that understanding meaning is the important component of reading, and students' understandings of the text are influenced by their prior culture, experiences, knowledge, author's styles and the text itself. From this perspective, it can be implied that the authors refer to the active role of a reader in understanding a text as well the four components (reader, text, author and cultural background). These definitions and perspectives provided by Arabic authors are in line with various reading models and learning theories that emphasise the active, constructive and transactive nature of comprehension. However, According to Al-Khalifa (2004), this perspective is not reflected in some teachers' practice of teaching reading.

After defining the general concept of reading comprehension, it is important now to explore definitions of the different levels of reading comprehension that are addressed in teaching. The following sections discuss the concept of reading comprehension levels, which in turn will reveal the rationale behind how students' comprehension is measured and taught in this study.

### **2.1.3 Definitions and teaching of reading comprehension levels**

As mentioned above, reading comprehension is a vital concept and the main focus of this study. Therefore, a fundamental step in the design of this research study was to explore ways in which variations in reading comprehension can be operationalised and measured. Three main reading comprehension levels (literal, inferential and evaluative) have been widely identified, included and used by various authors and experts in the field (Abu Humos, 2012; Al-Alwan, 2012; Al-Jarf, 2007; Bhatti, 2013; Brassell & Rasinki, 2008; Karlin, 1978; Pearson & Johnson, 1972; Sunggingwati, 2003). Although categorisation and labelling for reading comprehension levels vary from author to author, in essence most of them incorporate similar aspects of reading comprehension. For example, Karlin (1977) claims that reading for meaning involves literal, inferential and critical reading comprehension. Herber (1970) also

developed three level reading guides as a means for improving comprehension that include literal, interpretive and applied comprehension (Morris & Stewart-Dore, 1986). However, Zintz (1970) classified reading comprehension skills in only two categories, literal and interpretive comprehension, and incorporated evaluative skills as part of the interpretive category. In contrast, Pearson and Johnson (1972) proposed a taxonomy that classifies the relation between answer and question, and distinguishes between three types of relation: textually explicit (reading the lines); textually implicit (reading between the lines); and scripturally implicit (reading beyond the lines) comprehension. Overall, it is argued that the active process of reading should move beyond understanding the literal level and include reading and understanding between the lines (making inference) and beyond the lines (critical reading) (DeBoer & Dallmann, 1970).

Barrett's (1968) reading comprehension taxonomy, which is one of the taxonomies partially adapted in this study, classified reading comprehension levels as literal, reorganisation, inferential, critical or evaluative and appreciation (as cited in Pearson & Johnson, 1972).

Based on the discussions above, there are various classifications of reading comprehension. However, most of them focused on three main levels including literal, inferential and evaluative levels. Therefore, for the purpose of this study these three main levels of reading comprehension have been chosen and used. Each level is discussed in the following sections.

### ***2.1.3.1 Literal comprehension***

Defined by various researchers as the first level of comprehension, literal comprehension refers to the capability of understanding what is stated directly in a text (Durkin, 1976; Fordham, 2006; Karlin, 1978; Morris & Stewart-Dore, 1986; Royer & Cunningham, 1981). It equates to the ability to retell, recognise or recall explicit information

in the text. It is categorised as the lowest level of comprehension and easiest degree of difficulty. In other words, at this level literal comprehension means “reading of the lines” to find what is actually mentioned in the text (Morris & Stewart-Dore, 1986). From Barrett’s (1967, 1968) taxonomy, the reader needs to apply some comprehension strategies to reach a literal level of comprehension, such as recognising and recalling names of characters and details clearly provided in the text (as cited in Pearson & Johnson, 1972).

### ***2.1.3.2 Inferential comprehension***

At the second level of reading comprehension, the reader seeks a higher level of comprehension by inferring the intended meaning of a text. Inferential comprehension refers to the reader’s ability to comprehend implied meanings (Karlin, 1978; Morris & Stewart-Dore, 1986; Pearson & Johnson, 1972; Royer & Cunningham, 1981). Comprehension at this level is more challenging compared with the literal level, as it requires the reader to resort to prior knowledge to assist in understanding the implied meaning from the text (Brassell & Rasinki, 2008; Karlin, 1978; Royer & Cunningham, 1981). In order to understand implications embedded in the text, the reader needs to combine their own experiences with the explicit information presented (Cameron, 2009; Roe, Stoodt-Hill, & Burns, 2010). As with other levels, the reader applies various comprehension strategies in order make inference from the text. From Barrett’s (1967, 1968) taxonomy, examples of inferential comprehension strategies are inferring supporting details, identifying main ideas, comparison, cause and effect, predication, drawing conclusions and understanding figurative language (as cited in Latham, 2002; Pearson & Johnson, 1972). At the word level, this translates to inferring words’ intended meaning from context (Cameron, 2009).

### ***2.1.3.3 Evaluative (Critical) comprehension***

At the evaluative (also known as critical) third level of comprehension, the reader judges and evaluates the ideas and information in a text (Brassell & Rasinki, 2008; Durkin,

1976; A. J. Harris & Sipay, 1979; Karlin, 1978). This level is categorised as the highest level of the comprehension taxonomy and requires increased levels of interaction and comparison between information in the text and the readers' prior knowledge (Brassell & Rasinki, 2008; Pearson & Johnson, 1972; Roe et al., 2010). In order to think and read critically, the reader needs to understand what the author is stating and implying in the text; therefore, both literal and interpretative thinking are crucial for critical reading. The readers' background information is also an essential factor for critical reading skills (Roe et al., 2010).

Because evaluative comprehension is the hardest to achieve, various authors have identified a wide raft of strategies that can be applied in order to read critically and support students to gain this complex understanding, which must be taught to foster students' abilities in evaluating information that is presented to them. These include: from Barrett's (1967, 1968) taxonomy, judgment of reality and fantasy; distinguishing and separating between facts and opinions; adequacy and validity, appropriateness, worthiness, and desirability and acceptability (as cited in Pearson & Johnson, 1972); evaluating overstated or unfounded claims, judging emotional responses to what is read, determining the relevance of materials and evaluating the reliability of the author (Zintz, 1970); and lastly, identifying author qualifications, purposes and attitude, noting the currency of the information, determining propaganda and evaluating generalisations (DeBoer & Dallmann, 1970).

Teaching critical reading also includes the following specific strategies: (a) identifying the author's conclusion and what the author wants the reader to believe; (b) determining the supporting evidence presented to convince the reader; (c) determining the trustworthiness of the author; and (d) identifying invalid arguments and whether the conclusion derives from the evidence (Carnine, Silbert, & Kameenui, 1997). In addition, a critical reader recognises the author's purpose, the use of language, the forms of persuasive writing, questions the content,

evaluates the use of propaganda, evaluates the authors' logic and determines if adequate information is included (Roe et al., 2010).

Similar, overlapping strategies that can help readers evaluate and analyse information in the text involve: (a) identifying and evaluating the author's purpose in writing the text, and whether it informs, persuades, or entertains, in order to identify why the author wrote the text and, based on this, evaluating the validity of the information (C. Carter, 2013; Dillon, 2007; Flemming, 2009); (b) identifying the tone that is the author's feeling or attitude toward the information and topic, as this can affect the text, so the readers' ability to recognise the author's feelings assists them in evaluating the credibility of information presented (Ammar, 2009; C. Carter, 2013; Dillon, 2007); and (c) identifying intended audiences of the text by analysing the language used, such as vocabulary, terminology and depth of writing (C. Carter, 2013; Dillon, 2007).

#### **2.1.4 Effective approaches of teaching reading comprehension**

The previous sections discussed how the emergence of learning theories and reading models influenced the teaching and pedagogy of reading. Some of these approaches of teaching reading will be discussed in the following sections. A review of existing literature suggests that there are various approaches that can be used to teach reading comprehension strategies effectively. These approaches include explicit instruction, teacher questioning and question answering, student-generated questions and group discussion. As these approaches were adopted in designing the online discussion activities in this research, each approach is explained briefly.

##### ***2.1.4.1 Explicit instruction***

The explicit teaching of reading comprehension provides a framework for helping students recognise, apply and develop learned comprehension skills and strategies to other reading contexts independently, and it is considered an appropriate strategy for teaching



students at all ages (Tierney & Readence, 2005). As mentioned by Cameron (2009), research reveals that explicit teaching is particularly effective for comprehension strategy instruction, and can enable a learner to be an active and engaged reader. In explicit teaching, the teacher explains to the reader what the strategies are, as well as why, when and how they should be applied (Cameron, 2009).

Five generic steps of explicit instruction emerge from the research literature. These five steps include: providing a direct and explicit description of the comprehension strategy and when and how it should be applied; modelling the strategy; collaborative use of the strategy; guided teaching with a gradual release of responsibility; and finally, independent application of the comprehension strategy (Alfassi, 2004; Duke & Pearson, 2002; Pearson & Dole, 1987; Pressley, 1998; Tierney & Readence, 2005). Another framework for explicit strategy instruction was provided from a study by McLaughlin and Allen (2009) that involved various steps – explain, demonstrate, guide and reflect (McLaughlin, 2012). Winograd and Hara (1988) introduced a different representation of explicit teaching (as cited by Carrell, 1998), proposing five elements of teacher explanation including: what a strategy is; why the strategy should be learned; how, when and where to use the strategy; and how to evaluate use of the strategy. Due to the effectiveness of this approach, it is used as a part of teaching reading comprehension strategies incorporated into this research design, in which some strategies are explicitly explained and modelled by teachers.

#### ***2.1.4.2 Teacher questioning and question answering***

Teachers can use a questioning approach to help students' comprehension of texts. Through effective questioning, teachers can activate learners' prior knowledge, enhance their motivation to read, direct their thinking to particular aspects of the reading, monitor students' understanding of the text and result in effective learning (Searfoss & Readence, 1989). The

questions should assess students' comprehension and understanding at different levels, including literal, inferential and critical comprehension (McKenna & Stahl, 2009).

Teachers can adopt different approaches to promote questioning in the classroom. The traditional approach of questioning – 'initiate-respond-evaluate', in which a teacher asks questions, students answer and the teacher evaluates the students' answers (Afflerbach, 2007) – is now viewed as limited in terms of student independence. Another approach is 'question-answer-relationship', developed by Raphael (1982, 1986). This strategy aims to assist learners in finding an answer from the text, responding to different types of questions as well as thinking at different levels. Students in this strategy are encouraged to find answers by focusing on two main types of meanings: literal ('in the book') and implied ('in my head') (Tierney & Readence, 2005).

The three main levels of comprehension (literal, inferential, evaluative) are useful and practical for formulating questions about reading. It is claimed (Fordham, 2006; Gauthier, 2001) that the quality of students' thinking depends on teachers' questions and how they craft these questions. Thus, for fostering learners' thinking at different levels and improving reading comprehension, teachers can use these three categories of comprehension to formulate questions and queries about texts (Fordham, 2006; Gauthier, 2001) that cover various types of cognitive processes in comprehension (Gauthier, 2001). It is argued that teachers are not only required to use various types of questions for prompting answers from students and assessing their comprehension, but also teachers' questions should focus on the process of comprehension and how to stimulate the reader's thoughts about texts and on the thinking that leads to the answer (Shoop, 1987). Thus in this research design, teachers were advised to start an online discussion by asking questions that focus on the three levels of comprehension.

#### ***2.1.4.3 Student-generated questions***

Another useful approach for teaching comprehension is student-generated questioning, which is considered a comprehension-fostering strategy that promotes metacognitive and comprehension monitoring processes (Haller et al., 1988; Palincsar & Brown, 1984; Rosenshine, Meister, & Chapman, 1996). In this approach, the reader plays an active role by asking and generating questions about the material they read. It is evident that using this cognitive strategy brings about some advantages for students' comprehension. The most important advantage is that using this strategy results in comprehension gains (King, 1989; Rosenshine et al., 1996). For example, King (1989) found that using some types of student-generated questions strategy 'self-questioning or guide peer questioning improved students' recalling and understanding of the lecture content. Student-generated questioning has been named as one of eight useful approaches of teaching reading comprehension that have positive effects on students' comprehension gain (NICHD, 2000). Another benefit of using this strategy is encouraging students to pose thought-provoking questions and promote elaborative explanations, which in turn supports students' comprehension (King, 1992). This approach is grounded in various theoretical perspectives including active processing, metacognitive theory and schema theory (Wong, 1985). Due to the usefulness of this approach, in this research design the teachers encouraged students to generate questions about the text and the peer discussion around the text.

#### ***2.1.4.4 Group discussion***

Discussion is an effective teaching strategy that can be used in the classroom context (Applebee et al., 2003). Group discussion is one application of social constructivism and plays an important role in facilitating the sharing of meanings and responses to a text (Cairney, 1990). Discussion can help students to enhance their problem-solving abilities, and to improve their understanding of text through higher level thinking (Gambrell, 1996b).

Discussion can take place in different settings, such as a traditional FTF classroom or through using technological resources like online discussion (Davis, 2009). As this strategy is a key method used in this investigation, more literature was explored to ascertain its value.

Group discussion provides the learner with an opportunity to actively interact with others, give opinions, evaluate ideas, build knowledge, criticise and provide suggestions and justifications (Killen, 2006). Discussion groups enable students to construct meanings and demonstrate strategic reading, such as interpreting and predicting (Tierney & Readence, 2005). Using discussion groups supports the development of reading comprehension and can help improve reading enjoyment and motivation (Haring, 2006). Discussion can also develop students' skills and strategies used to comprehend a text (Berne & Clark, 2008). Moreover, the discussion group approach offers scaffolding and thus supports the teaching of reading (Irvan et al., 2007). Students who participate in discussions not only learn how to interact socially and develop communicative competence, but can also learn to take responsibility for their own learning and are more likely to engage in reading (F. Almasi, 1996).

Providing learners with opportunities to respond to literature and reading through discussion assists in their comprehension in different forms. One of these forms, as suggested by Rosenblatt (1995), is that the reader needs time to think about their own responses and to reflect on them before sharing with others. Using this strategy, it is suggested that after an initial reading of a text, before asking a reader to talk or write, time must be given for personal reflection on the literature (McCormack & Pasquarelli, 2009). The allocation of more time for building meaning collaboratively through conversation with others could then result in enhanced comprehension skills (Fielding & Pearson, 1994).

As the advantages of group discussion were established from the literature reviewed, structures to support productive interactions also emerged in the literature. Five examples of group discussion strategies are described below.

Reciprocal teaching is a particular model of group discussion (C. J. Carter, 1997; Palincsar & Brown, 1984; Pressley & Hilden, 2006; Westera & Moore, 1995). In this strategy, teachers and students engage in organised and structured conversations that focus on four reading strategies: questioning, summarising, clarifying and predicting. In a reciprocal teaching strategy, students learn from teachers' models and practices that occur through group dialogue and interaction (D. Cooper, Kiger, & 2008; Palincsar & Brown, 1984).

The transactional strategy is another example of a discussion scaffold based on teacher modelling, explanation, support and guidance, which is provided to learners when they interact with a text through group collaboration. In this strategy, students learn and comprehend the text by activating prior knowledge and interacting with the group (Klingner, Vaughn, & Boardman, 2007).

The third example of discussion strategy is the 'questioning the author' strategy, where students engage in collaborative discussion around questions that emerge during reading (VanDeWeghe, 2007). In this strategy, frequent modelling is required to support students' learning (Buehl 2008). The fourth example is the elaborative interrelating strategy through group discussion, in which learners are required to elaborate on and relate to the text by connecting it to their prior knowledge (VanDeWeghe, 2007). The final example is the collaborative reasoning strategy that improves critical thinking by involving learners in group arguments about a text, forcing learners to take a position and provide reasons and evidence from the text to support their claims (Sweet & Snow, 2003).

These five discussion strategies share some principles that informed the researcher to design pedagogical instructions for the current study. These principles included: the provision of teachers' support and modelling of how learners should engage in the discussion; involvement of students in group discussions that require them to be active and construct their own understanding through social interaction; application of various strategies such as

questioning, using prior knowledge, summarising, predicting, elaborating and arguing; and focusing on comprehension strategies that require students to think critically beyond the literal meaning. Some of these principles were applied to pedagogical design in this study.

Previous sections discussed the effectiveness of some teaching approaches that are commonly used in FTF teaching on students' reading comprehension, including group discussion. Although previous literature reveals that group discussion approaches used in FTF classes are useful for teaching comprehension, there are some limitations of FTF teaching; for example, limited time for participation and different students' learning styles (Thormann & Zimmerman, 2012). As students are different in their way of learning and thinking, for example, some students need flexibility and more time to think and prepare their responses in discussion activities, online settings could offer these learners additional support. In addition, some students are shy and prefer working on their own pace more than in FTF environment, again online learning could provide these students with contexts which suit their learning style better. The emergence of digital technology and its adoption in educational settings has provided a learning platform known as 'blended learning' which may help to solve some FTF learning limitations and extend opportunities for teaching reading comprehension, not only in the classroom but also online. As this study blends FTF learning with AOD, the following section defines and discusses some issues related to BL as a framework as well as AOD as a tool, before the related research is reviewed in Chapter 3.

## **2.2 Definition of Blended Learning**

Various definitions for BL have been discussed in the literature. The most commonly quoted definitions are documented by Graham, Allen and Ure (2003) and include: (a) a combination of instructional modalities or delivery media; (b) a combination of instructional methods; or (c) a combination of online and FTF instruction (Graham, 2006).

The original and most common definition of BL refers to a combination of FTF and online forms of teaching and learning (Devon, 2004; Graham, 2006; Mason & Renni, 2006; Sharma & Barrett, 2007). For example, Graham (2006) defined BL as where “blended systems combine face-to-face instruction with computer-mediated instruction” (Graham, 2006, p.5). Similarly, Devon (2004) described BL as “the use of synchronous or asynchronous technologies and traditional face-to-face instruction, in different forms or combinations, so as to facilitate teaching and learning” (Devon, 2004, p. 35). Sharma and Barrett (2007) defined BL as “course that combines a face-to-face (FTF) classroom component with an appropriate use of technology” (Sharma & Barrett, 2007, p. 7).

These definitions of BL were applied in previous research that investigated the combination of FTF and online learning tools in studies examining the effect of a combination of FTF classroom teaching with lecture and class formats and the use of an asynchronous online classroom on students achievement at higher education in Saudi Arabia (Al-Qahtani & Higgins, 2012), and the effectiveness of integrating online instruction with FTF instruction in an undergraduate course in Saudi Arabia (Alebaikan & Troudi, 2010). Other studies have examined blends of FTF and online learning in a secondary school English language arts class (Cacciatore, 2010), and the impact of a blended web-based learning environment on the perceptions, attitudes and performance of students in junior science and senior physics (V. Chandra, 2004). Other examples of blended learning research include Cherry (2010), Nellman (2008) and Nykvist (2008). This current study is based on the definition of blending online tools and FTF instruction as it was applied in previous research and synthesises the key ideas and concepts of BL.

### **2.3 Rationales for Using Blended Learning**

Instructors and designers need to ask themselves why they choose to employ BL and what advantages it provides for instruction and teaching. Blended learning is often considered

a useful approach that takes advantage of FTF interactions and the strengths of online learning (Graham, 2006; Singh, 2003), and is more effective than a single mode of learning (Mason & Renni, 2006); by the same token, it provides the opportunity to combine the best of both modes of learning (Devon, 2004; Graham, 2006).

Osguthorpe and Graham (2003) provided six reasons that encourage one to apply BL including: 1) pedagogical richness – increasing the flexibility of using the class time and combination of modes for the advantages of students' learning; 2) access to knowledge – increasing the pedagogical options that can be used by teachers and to increase students' accessibility to more information and resources; 3) social interaction – providing more opportunity to interact with others in both online and offline modes, as well as to share their thoughts, comments and questions ; 4) personal agency – developing learners' control, choices and responsibility for their learning, as well as allowing them to learn at their own pace; 5) cost effectiveness – reducing cost and saving time for institutions; and 6) ease of revision – providing a flexible learning environment and system that are easy to use, change and revise (as cited in Graham, 2006). Furthermore, Graham, Allen and Ure (2003; 2005) found that people choose BL for three main reasons, including: improved pedagogy by providing more effective pedagogical practice and increasing active, peer-to-peer and student-centered learning strategies; increased access to learning, convenience and flexibility; and increased cost-effectiveness (as cited in Graham, 2006). For these reasons BL was incorporated into the current research design to support students' learning and comprehension in the FTF Arabic reading classes.

## **2.4 Options of Blended Learning**

A review of previous literature reveals there are various options for BL from which designers can combine instructional modes, tools and teaching methods to achieve their objectives. The most common options include a combination of a FTF format such as lecture



and self-paced, asynchronous formats, which involve web pages, documents, self-assessment, online learning communities and discussion forums (Al-Qahtani & Higgins, 2012; Alebaikan & Troudi, 2010; Boehning, 2008; V. Chandra & Fisher, 2009; Yeo & Quek, 2011). Another form of BL is combining FTF instruction with a synchronous online mode that involves live e-learning, such as chat rooms (Litosseliti, Marttunen, Laurinen, & Salminen, 2005; Morgan & Beaumont, 2003) or instant messaging (Adams, 2007; Singh, 2003). Another format is a combination between synchronous and asynchronous web-based activities (Yeo & Quek, 2011).

Based on the discussion above and Singh's (2003) work, the most common components and combinations of BL include: a synchronous physical mode of learning such as lecture; a synchronous online mode that involves live e-communication, such as chat rooms; or self-paced, asynchronous mode, such as asynchronous online discussion.

It is essential for instructors to understand the strengths, affordances and weaknesses of both FTF and computer-mediated environments to decide whether to use one or both to obtain the learning aims (Graham, 2006; Stacey & Gerbic, 2008). It is important to ensure that the BL combines the strengths of both types of learning modes and minimises their weaknesses (Osguthorpe & Graham, 2003).

## **2.5 Definition of Online Discussion**

In a previous section, various approaches to group discussion were reviewed in relation to their impact on students' reading comprehension. In this section, online discussion will be reviewed as a more recent form of group discussion. Online discussion is considered to be one of the most commonly applied learning tools in online teaching (Dawley, 2007). Various authors and researchers define the term 'online discussion forum' and its main features, including: group members' interaction; exchange of ideas and continued

conversation; and online communication at any time and place (Davis, 2009; Dawley, 2007; Knowlton & Knowlton, 2001). These features are reflected in the following definitions.

Discussion forums often refer to websites where learners can post messages, read and reply to messages posted by others. They involve individual messages and threads (Davis, 2009). Online discussion has also been defined as an “asynchronous (out of time) exchange of messages by using an electronic bulletin board or email software” (Knowlton & Knowlton, 2001) or “text based human-to-human communication via computer networks that provides a platform for participants to interact with one another to exchange ideas, insight and personal experiences” (Hew & Cheung, 2003a, p. 249; 2008). Asynchronous online discussion as it was used in this study can also be described as the involvement of various learners or groups in online discussions or conversations in which each member participates by posting messages and responding to others’ posts where interactions do not occur at the same time (Dawley, 2007; Watkins, 2005). The review of research on the effectiveness of using online discussion in students’ learning and comprehension will be explored in the next chapter.

## **CHAPTER THREE**

### **LITERATURE REVIEW**

This chapter reviews studies that are relevant to the current study that explores the use of BL (AOD and FTF instruction) to support teaching and learning reading comprehension at the secondary school level. The literature is reviewed in three main areas: (a) effective approaches of teaching reading comprehension; (b) application of online discussion in teaching reading comprehension and learning in general; (c) methodological issues in previous research. The review of this literature helped the researcher to identify the theoretical basis of this study, design the teaching and learning activities used, and identify the possible and suitable research methodologies and techniques to answer the research questions.

#### **3.1 Previous Research on Effective Approaches of Teaching Reading Comprehension**

This section reviews previous studies that have been conducted on effective approaches of teaching reading comprehension. Given the purpose of this study, while attention will be given to other effective teaching approaches, the focus will be mainly on the use of group discussion approaches in teaching comprehension. Each teaching approach was reviewed in light of its potential to form part of the current study design. Reviewing the existing research on this area helped the researcher to determine the most effective approaches that can be used to teach reading comprehension, which could be adapted for the Saudi Arabian context.

As noted in Chapter 2, based on the relevant literature on supporting and promoting students' comprehension, the most widely effective methods of teaching, scaffolding and enhancing reading comprehension are reported to be the application of: (a) direct and explicit comprehension instruction strategies (Aghaie & Zhang, 2012; Andreassen & Bråten, 2011;

Clark & Graves, 2005; Duffy, 2002.; Duke & Pearson, 2002; NICHD, 2000; Pressley, 2001); (b) teachers questioning and students' question answering strategies that enable learners to answer and think at various levels (NICHD, 2000; Tierney & Readence, 2005); (c) student-generated questioning (André & Anderson, 1978; Dole et al., 1991; NICHD, 2000; Palincsar & Brown, 1984); and (d) group discussion that provides opportunities for learners' interaction and conversation with others about the text (Applebee et al., 2003; P. Murphy, Wilkinson, Sotar, Hennessey, & Alexander, 2009). As these approaches were integrated when designing the reading comprehension instruction in the current study, the following sections provide a detailed review of empirical research into each of these teaching and learning strategies and approaches in turn.

### **3.1.1 Explicit instruction and explanation of strategy**

A number of studies have been conducted to explore the effects of using explicit instruction on students' comprehension. The existing research on teaching reading comprehension suggests that teaching students comprehension strategies explicitly supports their comprehension of a text (Aghaie & Zhang, 2012; Andreassen & Bråten, 2011; Baumann, 1984; McLaughlin, 2012; NICHD, 2000; Prado & Plourde, 2011; Pressley, 2001; Rajabi et al., 2013). Until the 1970s, there was a lack of research on teaching students cognitive strategies (Durkin, 1978), then in the late 1970s, researchers started focusing on teaching students cognitive strategies that could be applied to reading comprehension (Rosenshine, 1995). The explicit instruction and explanation approach to teaching comprehension strategies is widely recommended in existing research and it is a now pivotal component of effective comprehension instruction (Andreassen & Bråten, 2011; Clark & Graves, 2005; Duke & Pearson, 2002; McLaughlin, 2012; NICHD, 2000; Pearson & Gallagher, 1983; Spörer, Brunstein, & Kieschke, 2009). It is argued that effective application

of explicit reading strategy instruction includes enhancement of students' metacognitive awareness of strategies (Carrell, 1998).

Different studies and reports concluded direct and explicit instruction is an effective approach for teaching comprehension strategies and skills in various school grades (Baumann, 1984; NICHD, 2000; Prado & Plourde, 2011). For example, Baumann (1984) conducted an experimental study to explore the effectiveness of the direct instruction model for teaching sixth grade students to recognise the main idea of a text. This model included introduction, example, direct instruction, teacher-directed application and independent practice. Baumann compared three groups, including a strategy group who received intensive, direct main idea instruction, a basal group who received basic 'traditional' lessons on main idea comprehension, and a control group who completed unrelated vocabulary development activities. Those research findings suggested that the direct instruction model of teaching has a powerful effect on students' ability to recognise and name explicit and implicit main ideas in a text. Prado and Plourdo (2011), in their quasi-experimental study of reading comprehension at elementary level, combined the strategies of: explicit instruction with visualisation, making connections by activating prior knowledge, asking questions, making inference and drawing conclusions, determining main ideas, synthesising information and using 'fix up' strategies. In their research, they explored the effects of explicitly teaching these strategies on various fourth grade students' reading comprehension sub-skills, including word recognition, vocabulary, literal comprehension, inferential/interpretative comprehension, evaluation and literary responses and analysis. They found a significant increase in students' post-intervention scores after students were explicitly taught reading strategies, which reveals that application of explicit instruction supports fourth grade students' reading comprehension. Two other recent experimental studies conducted by Marin and Halpern (2011) at the high school level concluded that explicit instruction is an effective

approach for teaching critical thinking to secondary school students. In that study, students received explicit instruction regarding critical skills, including the development of argument analysis, distinguishing between correlation and cause and effect, identification of stereotypes as well as the influence of mental models, and understanding the long-term consequences of decisions. The findings of that study showed that the students who received explicit instruction had much larger gains than those in an embedded instruction group, that is, the critical skills were embedded in the curriculum.

Based on the above discussion showing the effectiveness of explicit instruction of comprehension strategies, this strategy was selected as part of the design for the current study. The explicit instruction of various comprehension strategies were given to both FTF and BL groups, including identifying the main idea and sub-ideas of a text, evaluating the text, making inference from the text, and drawing conclusions.

### **3.1.2 Teacher questioning and students' questions answering**

Various studies have examined the use of teacher questions and the role of this strategy in supporting students' comprehension and encouraging students to engage in answering questions about the text. According to a review by the National Reading Panel (NRP) (NICHD, 2000), which analysed 205 studies on instruction of reading comprehension, a question answering approach is one of the seven kinds of instruction that are effective and most promising for classroom instruction. Teachers can apply various forms of questioning such as Question-Answer-Relationship (QAR) (Ezell, Hunsicker, Quinque, & Randolph, 1996), Questioning the Author (QtA) (L. Beck, McKeown, Sandora, Kucan, & Worthy, 1996; Tierney & Readence, 2005) and the 'K-W-L' strategy (What do I know? What do I want to learn? What did I learn?) (Ogle, 1986; Sampson, 2002; Tierney & Readence, 2005).

For example, various studies explored the application of the QAR strategy (Cortese, 2003; Ezell, Hunsicker, & Quinque, 1997; Ezell et al., 1996; Kinniburgh & Prew, 2010;

Raphael, 1982, 1986; Raphael & McKinney, 1983), with some results showing that this strategy benefits students' reading comprehension (Ezell et al., 1997; Ezell, Kohler, Jarzynka, & Strain, 1992; Raphael & Au, 2005). For example, in Ezell et al.'s (1997) study, all students who were taught using the QAR strategy increased their reading comprehension scores. However, most of the research around using QAR is in samples of students from early grades, not the secondary school level. Overall, the research showed using the QAR strategy can support students' comprehension.

Thus, the strategies of teacher questioning and question answering were applied in this study. The teacher started each online discussion by asking a question about the topic focusing on various comprehension levels such as literal and inferential comprehensions. Students in FTF group were given similar questions to be answered as traditional homework.

### **3.1.3 Student-generated questioning**

Another teaching approach is student-generated questioning. Previous studies established that the student-generated questioning strategy has a positive impact on students' reading comprehension (Dole et al., 1991; Palincsar & Brown, 1984; Rosenshine et al., 1996; Singer & Donlan, 1982; Yeh & Lai, 2012). The effectiveness and importance of this strategy was supported by the NRP's (NICHD, 2000) comprehensive review of 205 studies, which concluded that question generation by students is one of the seven strategies found to be most effective in promoting students' comprehension. However to achieve the positive effects of using this strategy, students must be given adequate training on how to generate questions (André & Anderson, 1978; Wong, 1985).

Various studies developed different forms and models to apply the student-generated questioning strategy (André & Anderson, 1978; Nolan, 1991). For example André and Anderson (1978) conducted experimental studies at the secondary school level and provided self-directed instructions and a training program for a self-questioning strategy. Twenty-nine

seniors participated in the first study and 81 juniors and seniors in the second study. The training program involved the introduction of a questioning strategy, focusing on identifying main ideas, modelling the use of this strategy, providing examples of questions and provision of a short passage with instructions on how to apply this strategy. These studies also emphasised the importance of training and teaching students how to apply the strategy. The results of achievement post-tests showed that self-generated questions can result in improved student comprehension.

Student-generated questions can be combined with another strategy (Nolan, 1991) and can be facilitated and supported by using online tools (Barak & Rafaeli, 2004; Belanich, Wisher, & Orvis, 2004, 2005; Yeh & Lai, 2012; F. Yu, Liu, & Chan, 2002). Some studies provided teachers with useful tools and guidelines for application of the student-generated question strategy. In addition, these studies provided evidence for the usefulness of this strategy to facilitate students' comprehension and learning. The usefulness of this strategy is evident in previous research; therefore, in this study, students were encouraged to generate their own questions about a text and peers' posts during AOD.

### **3.1.4 Group discussion**

Previous studies have explored the application of group discussion in teaching reading comprehension. According to Nystrand (2006), it is only since the 1970s that researchers measured how classroom discourse and discussion impact on students reading comprehension.

There are various types and forms of classroom discussions explored by researchers and used to facilitate students' comprehension and learning, including the instructional conversation model (Goldenberg, 1991, 1992; Olezza, 1999; Pomerantz, 1998), book clubs (Raphael & McMahon, 1994; Raphael et al., 1992), reciprocal teaching (Alfassi, 1998; Nystrand, 2006; Palincsar & Brown, 1984; Westera & Moore, 1995), transactional strategy



(Pressley et al., 1992), questioning the author (L. Beck et al., 1996), elaborative interrelating and collaborative reasoning (Nystrand, 2006).

Other forms of discussions explored by researchers are peer interaction (Palincsar, Brown, & Martin, 1987), peer-group discussion (Melothe & Deering, 1992), study group conversations about literature (Eeds & Wells, 1989), peer- and teacher-led discussion (F. Almasi, 1995), classroom discussion (F. Almasi & McKeown, 1996; Sweigart, 1991), and literature discussion groups (Commeyras & Sumner, 1996; Evans, 1996, 2002; T. A. Jewell & Pratt, 1999; Maloch, 2002).

Researchers have focused on various issues related to the impact and usefulness of discussion for teaching reading comprehension. Studies have shown that discussion approaches enhance students' achievement and reading comprehension (Applebee et al., 2003; Duke, Pearson, Strachan, & Billman, 2011; Fall, Webb, & Chudowsky, 2000; P. Murphy et al., 2009; Sweigart, 1991), support construction of meaning (Olezza, 1999) and promote students' understanding of materials (Fall et al., 2000). For example, a meta-analysis concluded that classroom discussion helps to improve students' comprehension (P. Murphy et al., 2009), and found also that many discussion approaches were highly effective in improving students' literal and inferential comprehension; however, few approaches enhanced students' critical thinking, reasoning and augmentation. In an experimental study conducted in the Saudi Arabian context, which explored application of a reciprocal strategy with intermediate first grade students, results of reading comprehension tests showed a positive effect on developing students' overall and specific comprehension skills (Al-Muntashiri, 2009).

Other research investigated the impact of using the discussion approach on students' discourse and participation in classroom activities. This is exemplified in Murphy and colleagues meta-analysis (2009), which found that several discussion approaches lead to the

increase of student discourse and reduced the amount of teacher talk; that is, the classroom shifted to a more student-centered model.

Some researchers also investigated group discussion from the perspective of teachers' and students' attitudes and perceptions after using discussion approaches in their learning (Alvermann, 1995; Alvermann et al., 1996; Whittingham & Huffman, 2009). For example, students preferred classes that gave them an opportunity to talk when they construct their understanding of complex topic (Sweigart, 1991). In another study, students preferred peer-led, small group discussion to other approaches that were more teacher-directed or involved the whole class (Alvermann et al., 1996). It was also found that involvement in a Book Club (a form of group discussion) has a positive effect on students' attitudes, specifically on students who have a resistance to reading (Whittingham & Huffman, 2009). However, in contrast, another study found students preferred the whole class and individual methods compared with small group discussion (as cited by Alvermann et al., 1996). These mixed results in the literature encouraged the researcher to explore students' perceptions of using group discussion in their reading classes in this study.

The various approaches and forms discussed above share some elements and principles, such as the application of discussion about the reading materials, interaction between learners and teachers, the active and constructive nature of learning, teaching of comprehension strategies and offering scaffolding, and creating a collaborative and supportive environment for learning.

The focus of discussion research has shifted from investigating only a single approach of teaching comprehension (*e.g.*, questioning the author) (L. Beck et al., 1996) to applying multiple teaching approaches, such as: combining reciprocal strategy and student-generated questions (Meyer, 2010); explicit instruction, teacher led whole-class, peer tutoring and reciprocal strategy (Van Keer & Verhaeghe, 2005); and instructional conversational and

literature log approaches (Saunders & Goldenberg, 1999). The results of such studies reveal that using multiple strategies improves students' reading comprehension (Stevens, 2003). For example, students who experienced the combined strategies of instructional conversation and literature log performed better than students who learned under other conditions in term of factual and interpretive comprehension (Saunders & Goldenberg, 1999).

Although, this research review reveals that most studies have focused on student discussion, another line of research has focused on the teacher, in terms of the role of teacher talk in literature circles (Short, Kaufman, Kaser, Kahn, & Crawford, 1999), the teacher's experience of transitioning into a literature discussion group (Maloch, 2004) and characterising teachers' discussion of assigned reading (Alvermann, O'Brien, & Dillon, 1990). This indicates a need to explore teachers' perceptions and their roles in the group discussion learning, which is therefore examined in the current research.

One important finding of this literature review is that much research has been conducted at the primary grade level (Chinn, Anderson, & Waggoner, 2001; Graup, 1985; Leal, 1992; Mizerka, 1999; Saunders & Goldenberg, 1999), compared with studies at the middle grades (Alvermann, 1995; Howard, 1992; Stevens, 2003) and secondary school level (Alfassi, 1998; Applebee et al., 2003; Billings, 1999; Fall et al., 2000; Olezza, 1999). Therefore, the current study is conducted at secondary school level to address this gap.

Another significant issue that emerged through the review of previous research is that the study design (*e.g.*, multi-group vs. single-group design) and nature of outcomes measures (*e.g.*, standardised vs. researcher-developed tests) can influence the effectiveness of an approach on students' comprehension (P. Murphy et al., 2009). More specifically, there are three main factors that contribute to the students' performance, which include the students' prior understanding of the material, the quality and depth of the discussion, and students' roles in the discussion (Fall et al., 2000). These findings informed the research design of this

study regarding the impact and significance of some factors that may affect student outcomes. Therefore, in this study, pre-tests were implemented to assess and control for students' prior comprehension, the instrument to be used was piloted, and research results interpreted with caution.

### **3.1.5 Reading comprehension levels**

As discussed in Chapter 2, the model of three main comprehension levels – literal, inferential and evaluative or critical – guided this study. These comprehension levels were utilised in previous research for three main purposes: (a) to design teaching instruction, for example to craft questions about the text, stimulate readers' thoughts and teach them how to comprehend the text (Fordham, 2006; Shoop, 1987; Sivadge, 1990); (b) to analyse reading textbooks questions (Abu Humos, 2012; Araújo, Folgado, & Pocinho, 2009; Sunggingwati, 2003) and teachers' questions in classrooms (Parker & Hurry, 2007); and (c) to design research methodology and measurement tools to gauge student comprehension, performance and understanding of the reading materials (Gauthier, 2001; Ofodu, 2012; Sachs, 1983; Talbott, Lloyd, & Tankersley, 1994). From a review of these studies, it can be concluded that these levels of reading comprehension are viable for designing teaching and learning activities as well as for designing measurement tools.

While much research has investigated the teaching of reading comprehension in FTF contexts, in the last decade a new trend of research has focused on the application of technology in teaching reading comprehension, such as using AOD to support teaching practice (Boehning, 2008; Brown, 2002; Chen & Wang, 2009; Conklin, 2005; English, 2007; S. Yu, 2009). This trend of investigating the use of online discussion is reviewed in the next section.

### **3.2 Use of Online Discussion at the Secondary School Level**

Although various studies have indicated that online learning in general, and specifically online discussion, yields educational advantages (Conklin, 2005; Culpepper, 2002; Hobgood, 2007; Lipponen, Rahikainen, Lallimo, & Hakkarainen, 2003), some of these and other studies have found that the use of online discussion at the secondary school level poses some difficulties (Conklin, 2005; English, 2007; Love, 2002). The following sections summarise the findings of previous studies regarding the application of online discussion in various secondary school curricula, mainly, its implementation to support reading comprehension. Some studies from other school grades and higher education are also included to extend this review. This literature review focuses on four issues related to online discussion: (a) effect of online discussion on reading comprehension and learning; (b) contribution of online discussion to learning in general and on reading classes; (c) challenges of using online discussion; and (d) the teacher's role in facilitating online discussion.

#### **3.2.1 Effect of online discussion on reading comprehension**

The main aim of this study is to explore the effect of blending AOD with FTF reading classes on reading comprehension. Therefore, a review of previous studies in this area was conducted. It revealed only a small number of studies that explored the phenomena at the secondary school level and no study in a Saudi Arabian context. In addition, only a few studies investigated the effect of online discussion specifically referring to the levels of reading comprehension discussed in the previous chapter.

Some studies found that online discussion has a positive impact on students' reading comprehension and learning (Conklin, 2005; Jewell, 2005; McClain, 2002). For example, Jewell (2005) found that the reading quiz pass rate of secondary school students improved from 44% to 94% after the application of asynchronous online group discussion ("group

AOD”), which supplemented the classroom reading. Conklin’s (2005) study implemented group AOD by giving high school students assignments in three content areas (history, English and physics) and asking them to comment, respond, critique and reply to others. Students completed their discussions during and outside class time. The study applied various research techniques including surveys, interviews and analysis of students’ online discussion transcripts. The results revealed that AOD supports students’ learning, helps students construct their knowledge and promotes individual cognitive aspects of learning, such as reflection and processing. However, some negative impacts were found, which will be discussed in the challenges and difficulties sections below.

Larson (2009) found that involvement in group AOD by responding to initial teacher prompts and peers’ subsequent posts about the literature encouraged fifth grade students to generate deep responses to the literature and enhance social constructed learning. In another study, the application of asynchronous threaded group discussion about novels at the intermediate school level encouraged participants to think more deeply and thoughtfully about their responses to the readings and their peers compared with using a paper journal or FTF discussions (Grisham & Wolsey, 2006).

Some previous studies suggest that online discussion helps to facilitate students’ application of comprehension strategies and skills. For example, students who participated in AOD related readings to their own knowledge and experience, made predictions, solved problems, drew inferences, and sought answers and clarification (Larson, 2009). Applications of online discussion also assisted students to analyse and clarify different issues related to the text and to connect the reading with issues discussed in the classroom (Jewell, 2005).

A number of studies have shown that online discussion supports students’ critical thinking (Burgess, 2009; Cheong & Cheung, 2008; Zhang, Gao, Ring, & Zhang, 2007). For instance, involvement in online discussion activities enables learners to discuss tasks critically

in FTF discussion more so than learners who did not practice online discussion (Zhang et al., 2007). In learning via online discussion, it is expected that students produce in-depth responses and reflections (English, 2007). Accordingly some studies found that in online discussion students displayed high levels of cognitive responses, including inferences and judgments levels of comprehension (Brown, 2002). McClain (2002)'s case study conducted at the middle school level found that in eighth grade language arts the use of Internet tools (online discussion, e-mail) over four months affected reading in a positive way, by improving students' motivation to read and promoting critical reading.

Online discussion helps learners construct and increase their knowledge, experiences and perspectives regarding the ideas they are discussing (Conklin, 2005). This advantage of online discussion is manifested in various research studies (Grisham & Wolsey, 2006; Larson, 2009; Markel, 2001). Meaning can be constructed when learners participate, read and negotiate with others, and express their opinions (Grisham & Wolsey, 2006). Likewise, Larson (2009) validated the idea that involvement in online discussions supports social construction of knowledge in which learners benefit from each other's support and knowledge construction. In another study, researchers confirmed that participation in an online discussion facilitated social construction of student knowledge and group building of meaning (Jahnke, 2010).

However, other studies have found that online discussion does not improve reading achievement. For example, Yu (2009) investigated the impact of synchronous online discussion on FTF discussion and academic achievement in senior secondary school English classes. That study found that online discussion did not result in any quantitatively measured improvement in students' academic achievement, although the data generated from students' journals indicated that many students were able to accomplish knowledge and understanding. Similarly others also found that online discussion did not promote achievement in reading,

grammar or vocabulary for senior secondary school students with English as a second language (Zhang, Gao, Ring and Zhang, (2007). White (2006) compared the responses and analysis of short stories by sixth and seventh grade students using online versus FTF discussion groups and found that FTF discussions enhanced students' ability to respond and analyse literature more than the online discussions. The students in the FTF discussions were able to produce meaningful responses to the literature and achieved significantly higher scores than online discussion groups. It was concluded that, overall, students in FTF groups manifested inferential thinking skills and made connections to their own experiences as well as to other literature better than students involved in online discussions.

Other research findings showed no significant change on critical thinking levels over time when using online discussions to learn (Cook, 2008). At the post-secondary level, the critical thinking displayed by most messages posted in an online discussion was superficial, based in comparing and sharing information; only a small proportion of posts involved a higher order of cognition (McLoughlin & Luca, 2000).

From the discussion above, it can be concluded that the effect of using online discussion on students' comprehension and learning in reading classes is not consistent. This inconsistency could be attributed to differences in the teacher preparation and overall instructional design, including: provision of guidelines; teacher involvement and role; type of topics; design of learning activities; duration and structure of discussions; study context; and the use of different online tools. Further, research design and assessment tools may have impacted the study outcomes. The inconclusive results about the value of online discussion suggest that there are a number of challenges in designing and assessing AOD activities. Therefore a number of factors were taken into account in designing AOD and proving its impact in the current study.



### **3.2.2 Contributions of online discussion to students' learning in reading classes**

As well as investigating and reviewing the previous research about improvements in reading comprehension, another important aim of this review is to understand how various online discussion features support learning in reading classes, affect students' participation and interaction with others, and influence students' and teachers' perceptions toward using online group discussion. To this end, a review of previous research was conducted in this area and suggests that the use of online discussion supports students' learning in different ways. It has some considerable advantages in teaching at different educational levels, including secondary school: (a) increased participation; (b) supporting social interaction; (c) offering flexibility of time and place; and (d) improving enjoyment and comfort.

#### ***3.2.2.1 Increased participation***

One important aspect that was examined and tested in the current study is the usefulness of AOD regarding students' participation when they discuss readings. A review of previous research revealed that online discussion supports students' participation (Black, 2005; V. Jewell, 2005; Krebs, 2004; S. Yu, 2009) and facilitates equal chances and more opportunities for students to contribute and participate (Brown, 2002; Jahnke, 2010; M. G. Moore, 2002). The use of such online tools results in enhancement of the learners' participation and extension of their conversation about the literature tasks beyond the bounds of FTF classroom time and place (V. Jewell, 2005). It is also beneficial for more silent students to express their views, as well as for students who regularly participate in FTF classroom discussions, as online discussion also encourages them to generate in-depth responses (English, 2007).

Northrup (2009) conducted a study of secondary school English classes in which students attended class discussion and then participated in a voluntary online threaded discussion about novels. Students read and responded to more than 90% of discussion board

posts, suggesting there was a high level of individual involvement in online discussion about the literature. These findings confirmed Conklin's (2005) study, which used surveys and interviews with secondary school students to show that online discussion enables students to participate, as much as they want, and more than they normally do in a traditional classroom. In Bohning's (2008) study, which explored the use of Moodle tools (*e.g.*, accessing links, blogs, Wiki and discussion forums) in eighth grade language art classes over two weeks, it was concluded that all students were involved and participated in the online discussions more than they did in regular classroom discussion.

Another study conducted by Yu (2009) investigated the effects of online discussion on FTF participation and academic achievement of 18 public secondary school students in English classes, showing that the rate of students' participation improved in FTF discussions.

At the post-secondary level, studies showed that computer bulletin board discussions have the potential to improve learners' participation and interaction (Pena-Shaff & Nicholls, 2004) and provide all learners with the same chance to express their thoughts (Pena-Shaff et al., 2005).

However, there is research that suggests that the level of participation in online discussions may also decrease. This is illustrated by Cook's (2008) study in which middle year students participated in small group literature discussion forums about stories and were given individual feedback every week about their participation. Students' participation in the online discussion declined significantly over time. The study also found that the quality and quantity of the students' responses were influenced by various primary factors, including students' interest level regarding content, difficulty level of the stories, and interactions with peers.

Other studies also explored students' participation rates in online discussion, with some studies finding considerable differences in participation rates between students,

indicating that some students engaged more actively than others (Lipponen et al., 2003; Yeo & Quek, 2011). In research at the graduate level, Hara, Bonk and Angeli (2000) used online discussion in the form of an instructional approach called 'starter-wrappers' to supplement class discussion over 12 weeks and established that most students posted only the required quantity of messages per week (*e.g.*, one). Also, interestingly, the discussions were dominated by students, not the teacher (Hara, Bonk, & Angeli, 2000).

One factor that could affect students' participation in online discussion includes familiarity with peers in the discussion forums. For example, Cook (2008) suggested that students who had friends in their group showed more positive experiences compared with those who did not. At the higher education level, participants perceived they are more likely to contribute to discussions generated by other learners who they are familiar with (Pena-Shaff et al., 2005).

Previous studies suggested that there are various factors that limit students' participation in online discussion. For example, Hew, Cheung and Ling Ng (2010) explored the factors that caused a limited contribution from students in online discussions. By reviewing 50 empirical studies they identified seven common factors that contributed to non-participation: (a) not being able to identify the need and importance for online discussion; (b) moderator and other participant behaviour (*e.g.*, lack of immediate response to their questions from others, no interest or involvement shown by the teacher); (c) personality traits; (d) difficulty in keeping up with the discussion because of information overload; (e) not knowing what to contribute; (f) exhibiting a surface level of thinking or low level knowledge construction; and (g) technical aspects (Hew et al., 2010). In another study, students perceived that in asynchronous learning environments participants can be frustrated if they do not receive any comment from others or even receive negative responses (Jahnke, 2010).

### ***3.2.2.2 Supporting social interaction***

One aim of this research was to understand how students interact in online discussion designed to support reading comprehension. Therefore, it was important to explore literature around students' interaction with materials, peers and the teacher in an online environment. For example, it is usually argued that, the use of online discussion provides a community environment to support learners' social interaction. Discussion in online forums may be interactive (English, 2007; Grisham & Wolsey, 2006; Larson, 2009), with students posting and responding several times. Online discussion provides various opportunities for student–teacher and student–student interaction (English, 2007). A well-applied online discussion has the potential to improve the quality and quantity of student interaction (Black, 2005).

Online discussion is a communication tool that helps learners interact, discuss and dialogue with other learners and instructors regarding the tasks and the topic under consideration. This is supported by different studies that claim online discussion increases social interaction and sharing of ideas between members involved in community learning (McClain, 2002; Jewell, 2005; Northrup, 2007). Online discussion, in relation to reading comprehension, is considered an important tool that engages students in social conversations about texts (Kirk & Orr, 2003). Student interaction in online discussion groups can improve over time, however, a good proportion of the students' interactions are off-topic (S. Yu, 2009). Students perceive that learning through online discussions provides participants with a valuable chance to share their perspectives and opinions with their peers and the moderator (Hobgood, 2007).

Online discussion can also facilitate interactivity. Brown (2002) concluded that online discussions between students were interactive and included both implicit and explicit responses among participants. In Janhk's (2010) study, students considered interactivity as being an important element of online discussion as well as a form of interaction within a

social activity. Students listed different examples of interactivity, including providing feedback, asking questions, supporting others, reminding others, encouraging participation, asking for clarity and probing for more in-depth details.

Most of the studies cited above were conducted at the middle and secondary school levels; intense interaction between learners was also observed at the elementary level. Social interactions could be a valuable advantage as students have a connection with each other and exert influence on each other. An intense interaction between participants, however, could also cause information overload (Lipponen et al., 2003).

At the post-secondary level, research has also shown that online discussion supports students' interactions. For example, Hara and colleagues (2000) found that students' messages contained references to peers, which is an indicator of interaction between students. In addition, it was observed that students' posts become more interactive as time progressed and students read each other's messages. Another study by Pena-Shaff and Nicholls (2004) confirmed that online discussion can increase the interaction between learners.

By participating in social interaction with others, students in an online discussion can learn by reading and hearing others' opinions. Brown's (2002) study revealed 91% of students felt that hearing other perspectives and contributions assisted them in learning about subjects as well as clarifying their own ideas. The same study reported students felt that reading others' comments constituted another source of learning. Moreover, a study conducted by Grisham and Wolsey (2006) established that students build their own knowledge and understanding in online discussion by exploring the text from different points and perspectives. Conklin's (2005) study supported the idea that students learn, and build their knowledge from each other's contributions in an online discussion.

A number of studies have illustrated that different types of social interaction emerge in online discussions. In one study, students voiced their opinions and agreement, connected to

the reading texts and asked and answered questions (Northrup, 2007). In that study, the majority of student responses included answering questions, sharing opinions, agreement and making connections to the text, themselves and the world; asking questions was the least-posted type of messages. It was also observed that students posted very few incorrect answers in the discussion. In Jahnke's (2010) research, students perceived that by interacting in online discussion, they were able to comment, seek advice and debate with others. Krebs (2005) reported that students used the discussion forum for various activities, including posting questions, answering others' questions, re-reading content, learning from other students and the instructor, reflecting on their learning and responding to each other.

Another type of student interaction observed in online discussions is the scaffolding and support they provide to each other. Larson (2009) concluded that students in fifth grade depended on each other for guidance, support and building knowledge. Students supported each other in online discussion by valuing others' responses, thanking each other for their contribution and responses and posting complimentary messages (Larson, 2009). Hara et al.'s (2000) study supports the idea that in an electronic discussion environment learners scaffold each other's learning.

Agreement and disagreement are examples of students' interaction types in online discussions. In a study by Cook (2008) the majority of students agreed with each other's comments rather than disagreed. In contrast, another study found a low percent of student agreement, with students tending to disagree and challenge others and provide different opinions (Northrup, 2007). At the post-secondary level, students commented on messages that they disagreed with rather than to posts they agreed with (Pena-Shaff et al., 2005). The agreement-disagreement interaction behaviour category was also included in a framework to analyse content of students' interaction in online discussion (Zhu, 1996).

Previous studies have found that, in online discussion, learners may get involved in both on-task and off-task conversations. ‘On-task’ conversation refers to posts relating to the topic under discussion while ‘off-task’ refers to posts not related directly to the topic. It is important to direct learners to focus on the topic under discussion so learning can take place. Taking focus of class learning – on- or off-topic – as an indicator of the quality of discourse (Lipponen et al., 2003) showed 69% of elementary students’ online discussion was on-task. A study at the post-secondary level also found that learners were extremely content-focused in their discussions (Hara et al., 2000).

Off-task discussion could include social conversations, such as greetings and sharing personal experiences. Although social talk is not related to the task under the discussion, it can be beneficial, with positive effects on students’ interaction in online discussion, for example, social messages being intertwined with on-topic discussion. Also the substantial messages of social talk can contribute in guiding group conversation to indirectly overcome the intrinsic challenges of collaborative learning (Chen & Wang, 2009). Social interchange was manifested in the study by Lipponen et al. (2003), and considered useful for activating participation in discourse, enhancing motivation and building the sense of community.

### ***3.2.2.3 Flexibility (anytime and anywhere)***

Previous studies have revealed that one of the most important aspects of online discussion is the ability to provide learners with the chance to learn and participate anytime, anywhere and at their convenience (Conklin, 2005; Hew & Cheung, 2003b; Tiene, 2000; Wu & Hiltz, 2004). Another aspect of online discussion is to provide learners with adequate time to reflect and produce critical and thoughtful responses (Black, 2005). Reflection time is seen as an advantage of AOD that helps students prepare and formulate their thoughts before posting them to forums (Jahnke, 2010). In Conklin’s (2005) study, student survey and interview data indicated that online discussion provides students with sufficient time for

reflection, editing and re-editing, preparing better answers, expanding their understanding, reducing pressure, thinking longer, reading others' contributions and asking and answering questions.

Also known as 'anywhere learning', AOD helps students' participation, providing access to others' ideas and contributions (Conklin, 2005). The flexibility of time improves the quality of both individual posts and whole discussions without time constraints, as can be the case in FTF discussion (Northrup, 2007).

A study at the post-tertiary graduate level, found that electronic learning activities, such as online discussion, provide learners with more time to formulate their reflections on content, producing more in-depth cognitive and social posts, more than could occur in traditional FTF learning (Hara et al., 2000). In addition, every learner in an online discussion can become a regular participant and contributor to the discussion if they are convinced to participate (Hara et al., 2000). Pena-Shaff and colleagues' (2005) study that showed online discussion provided more time for reflection, preparation, thinking and organisation of ideas before students posted and shared them with others.

However, restricting online discussions to a short time period can result in occurrences of one-way communication and interaction. Therefore online discussion must have, and give, learners ample time to participate, read others' posts, reflect, type and wait for responses. Students in online discussions need more time to carefully and deeply articulate and revise their ideas and posts (Wang & Woo, 2007). Allocating adequate time for students to prepare their responses and think about their contribution provides all participants with the same opportunities for sharing their perspectives and opinions (Larson, 2009).

Studies have shown that online discussion supports flexibility of anytime and anywhere learning by providing a permanent written archive of a discussion, which is available to the learner even after completion (Northrup, 2007). Conklin's (2005) study



showed that students benefitted from access to this stored, rich information, content and contribution of peers. This stored record assisted students in using others' ideas to clarify, refine and build their own understanding. In addition, students were able to compare their posts with others and retrieve what they had missed in the discussion (Conklin, 2005). The ability to access and revisit others' ideas and posts when needed is perceived as a valuable advantage of online discussion and contributes to student learning (Hew & Cheung, 2003b; Jahnke, 2010; Pena-Shaff et al., 2005; Tienne, 2000).

#### ***3.2.2.4 Improved enjoyment and comfort***

Various studies have found that learners are positive about using online discussion in their learning (Conklin, 2005; Yu, 2009; Hobgood, 2007; Brown, 2002). Online discussion also improves students' comfort level in FTF discussion (Yu, 2009) and offers an opportunity to learn with less pressure (Brown, 2002). In Brown's (2002) study, students' felt online discussion was advantageous for their learning and interacting with peers. When students were asked about their preference for online discussion groups over FTF discussion, they agreed that they felt more comfortable writing their ideas in an online discussion than expressing them verbally (White, 2006). In another study at the post-secondary level, some students felt more comfortable discussing ideas in an online discussion medium than in a FTF setting (Pena-Shaff et al., 2005).

Some studies also showed that students enjoy participating in online discussion. For example, Hobgood's (2007) study found that more than 55% of secondary school students enjoyed their involvement in an online discussion. Grisham and Wolsey (2006) also found that the majority of participants enjoyed their involvement in threaded discussion in groups, and only a small proportion of students disliked it. Boehning (2008) interviewed 12 students who participated in a Moodle course, which involved an online discussion forum. The

students perceived this new experience as fun for various reasons, including using technology, a new mode of learning, individuality and interaction with peers.

A study by Cheong and Cheung (2008) examined the quality of thinking and perceptions of using AOD by secondary school students in an online discussion that was student-centered with teacher assistance and scaffolding. The findings showed that most students had positive perceptions of online discussion and its role in learning and thinking.

Some studies showed that students' perceptions of online discussion are related to their perceptions of learning from online discussion. For example, Hobgood (2007) found that there was a correlation between secondary school students' perceptions of motivation and enjoyment and their perceptions of learning. However, not all students like all aspects of online discussion. For example, in Brown's (2002) study, students were asked what they liked least in online discussion. They disliked not being part of the topic selection process and made negative comments regarding learning styles; for example, some students preferred talking to writing, and some others were more visual than verbal learners (Brown, 2002).

### **3.2.3 Challenges of using online discussion**

In order to design and implement online discussion to support reading comprehension for the current study, it was important to review literature related to the challenges of applying this method. Although, as discussed earlier, integration of online discussion in teaching and learning provides some benefits, it also poses some challenges, which include: (a) technological difficulties; (b) feelings of isolation; (c) lack of prior knowledge, experience and skills in using online discussion; (d) lack of immediacy; (e) increased workload; and (f) storing information and quality of posts.

Research has indicated that one of the most prevalent difficulties faced by learners and instructors working with AOD relates to technology (Hew et al., 2010) and forum features (Murphy & Colema, 2004). Several technological problems may emerge during participation

in online discussion, for instance, not having adequate access to a computer or the Internet (Conklin, 2005), or accessing and navigating a threaded discussion (English, 2007). Technical difficulties such as registration and log on issues may limit students' contribution in the discussion (Hew et al., 2010). However, these kinds of technical problems are significantly diminishing as equipment becomes less expensive and online services proliferate at affordable costs (Tiene, 2000).

Another challenge identified by various studies in this area is that students may find communicating and interacting in online discussion more challenging as a result of feeling isolated. For example, Krebs (2004) found that secondary school students struggled with communication due to the absence of nonverbal elements. In this respect, Conklin (2005) found some disadvantages of online discussion related to social interaction, including separation from others, which causes a feeling of isolation in some learners. In that study, Conklin found that separation from others caused an absence of excitement, expression and other feelings, which are afforded by FTF communication.

In an online discussion environment, the limitations caused by a lack of gestures, facial expressions and voice tone lead to some challenges and communication problems. These problems include difficulties in understanding the intent of posts that may result in misinterpretation and confusion (Murphy & Colema, 2004). Similarly, Williams and colleagues' (2001) study revealed that the lack of the FTF elements was a challenge for the facilitator of an online discussion. A further concern is that not all learners will receive comments or responses to their posts, and this may in turn affect their overall interaction and learning (English, 2005), thus increasing the probability of feeling isolated.

This problem of feeling excluded from the discussion group can be observed when some students or an instructor dominate the discussion. As found in Murphy and Colema's (2004) study, domination of the discussion can make participants feel excluded and frustrated.

In that study students expressed their feelings of exclusion in various comments, such as “very alone” and “feelings of being outsider”.

Although separation from others can result in feeling isolated, it can also be considered an advantage to students who prefer working on their own. For example, according to Conklin’s (2005) study, for some students, separation from others was considered an advantage insofar as they felt socially comfortable, freer to participate, less subject to personal criticism and valued others’ opinions. Other students in that study, however, did not perceive separation as an advantage.

Another difficulty pointed out in the literature is that a lack of moderators and student knowledge, experience and skills in using online discussion tools can be challenging. Moderators’ involvement, support, contribution and feedback play an important role in online learning, including online discussion (Berge, 1995; Burge, 1994; Hobgood, 2007; Smith, 2005). They should have adequate teaching and moderating knowledge and skills to facilitate and manage student participation and learning in online discussions (Goodyear, Salmon, Spector, Steeples, & Tickner, 2001). The instructor’s contribution to the learning process is a significant factor for the effectiveness of any teaching, regardless of delivery method (E. S. Johnson, 2007).

Other problems that are related to a moderator’s lack of knowledge and skills may include lack of computer skills, including Internet use, planning and designing lessons, and activities and managing participation (Conklin, 2005; English, 2007; Yeo & Quek, 2011).

Love (2002) explored the challenges facing eleventh grade teachers when they employed online discussion in their classrooms. The primary challenge was related to the language mode used in online discussion, that is, assisting discussants to organise and formulate their written language. Other challenges included topic and content selection, and regulation of students’ interaction and relationships in the online context, which required

scaffolding student–student interactions. Teachers were disappointed because students perceived their roles as responding to the teachers’ questions rather than responding to their peers’ posts and contributions. Love (2002) suggested that the lack of student–student interaction was because both teachers and students were applying a new mode of learning and interaction.

One potential factor that may hinder student learning and critical thinking in online discussion is the lack of students’ previous knowledge and experiences in using online discussion, as well as the lack of thinking skills (Cheong & Cheung, 2008).

Another challenge cited by researchers in online learning is the lack of immediate feedback from teachers and peers. Previous post-secondary studies established that immediate behaviour of teachers – such as feedback, humour and encouragement – are associated positively with student learning and satisfaction (Arbaugh, 2001). Although time flexibility helps students’ effective learning and interaction, it also poses some difficulties, including lack of timely and immediate feedback and responses received from others (Hew & Cheung, 2003b; Hew et al., 2010; Wang & Woo, 2007). The lack of teacher or student response could be one factor that limits students’ participation in online discussion (Hew et al., 2010).

As reported in another study, 94% of students checked frequently if peers had replied to their contribution, indicating receiving peer feedback was a critical factor that influenced participation and interaction in online discussion (Pena-Shaff et al., 2005). That study revealed that not receiving feedback impacted negatively and hindered learners’ participation.

A potentially increased workload is another problem that participants face in online discussion (Hew et al., 2010). Teachers found moderating students’ online discussion and interactions a demanding task. However, Black (2005) suggested that this problem can be

solved by giving students more responsibility for their participation in online discussion, such as monitoring the discussion (Black, 2005).

Studies revealed that students also find the increased workload challenging, at times finding it difficult to keep up with the discussion (White, 2006). Although, as noted above, flexibility of participation in online discussion is useful to students' learning, it may create information overload, as students can write as much as they want (Conklin, 2005; Hew et al., 2010). Some learners reported it was not easy to follow a large group with too many people contributing and posting (Wu & Hiltz, 2004). Even graduate students perceived that it was challenging to maintain the same rate of posting as other participants. The pressure to participate in the discussion and keep up with their peers led to workload problems, for example, long messages posted by some discussants (E. Murphy & Colema, 2004).

As discussed above, students could benefit from having a permanent record of their online discussion. However, there are some concerns about the quality of information stored, and how this could have detrimental effects on the quality of learning. For example, such records could involve incorrect information or poorly written work; some students were in fact afraid to participate in case they made mistakes, considering that their work would be available to the public (Conklin, 2005). The quality of learners' posts could be affected by feeling pressured to meet course requirements and to keep up with others' posts and replies (Murphy & Colema, 2004). In Murphy and Colema's (2004) study, students perceived that there was lack of meaningful and thoughtful posts, a focus on quantity not quality, a lack of depth and some students provided vague comments. As reported by Pena-Shaff et al. (2005), some participants perceived that most of messages in online discussions were personal thoughts and those messages did not add much value or meaning to the content.

### **3.2.4 Teacher's role as facilitator**

The role of teacher and moderator in developing, facilitating and monitoring the quality of online discussion forum is vital. It is argued that an effective forum must have a successful moderator whose guidance influences the quality of online discussion (Guan, Tasi, & Hawang, 2006). In a computer-mediated communication environment, instructors and learners sometimes face, and feel that they are challenged by, new tasks and roles that they need to carry out and master (Berge, 1995). It is critical for teachers to adopt a facilitator role by encouraging learners to control, and be responsible for, their own learning (White, 2006).

The transition from traditional instruction to an online mode of teaching and learning requires qualified instructors who are prepared to provide quality and successful online instruction (Yang & Cornelious, 2005). As such a transition takes place, a teacher should adopt approaches appropriate for computer-mediated education. For example, the view of teachers' roles in computer-mediated learning should change from that of an information provider and transmitter to a guide and mediator of student-centered experiences (Muinhead, 2001; Salomon, 1992).

Overall, instructor roles in an online teaching and learning environment are different from FTF classrooms (Andresen, 2009; Coppola, Hiltz, & Rotter, 2001). In this regard, Goodyear et al. (2001) pointed out that "the ways in which 'good teaching' is expressed may be very different in the two settings of FTF teaching and online teaching" (p. 71). They further identified and described a range of roles of an online teacher, which include content facilitator, researcher, assessor, advisor, process facilitator, technologist, designer and manager (Goodyear et al., 2001).

Different studies have emphasised the importance of instructor roles in supporting students' participation and learning in online discussions. Zhang, Gao and Zhang (2007) concluded that the instructor's contribution in online discussion had an effect on students'

attitudes toward online discussions and enhanced their critical thinking and learning efforts. In addition, they found that instructor's support makes students feel comfortable about participating in online discussions. That study showed that the students who participated in online discussion with instructor intervention, as compared with those in online discussion without instructor intervention, wrote more for their assignments contributed more messages and wanted to post more after receiving instructor feedback.

Other studies found that the instructor presence and scaffolding in an online discussion was vital in improving the level and complexity of learners' posts, and promoting more effective and interactive discussions, and resulted in better literacy responses compared with FTF discussion (Grisham & Wolsey, 2006). Also, the moderator's behaviour can increase participants' involvement in the learning activity (Tagg & Dickinson, 1995). In a study of eighth grade students, it was concluded that the teachers' roles, participation and presence were important factors for providing effective and successful online discussion (Livingstone, 2009).

Furthermore, the students' awareness of the instructor's presence in a discussion may encourage them to produce more appropriate and high quality contributions (Northrup, 2007). This was also supported in other research that showed the immediacy of instructor behaviour has a significant influence on students' motivation and learning in online discussion (Hobgood, 2007). In addition, students who participated in online discussion perceived that more teacher involvement and feedback are needed and valuable. A lack of sufficient and clear guidelines and instructions could result in poor-quality posts (Cheong & Cheung, 2008).

As students could find it difficult to participate in online discussion, some authors agreed that teachers need to model expected responses from students (English, 2007). Teachers can also provide effective modelling of student-student interactions explicitly by showing how learners could respond to others in a critical and constructive manner (Love,



2002). Teachers in online discussion environments should also monitor students' conversations (Grisham & Wolsey, 2006). As suggested by Yeo and Quek (2011), close monitoring by the teacher-facilitator can help reduce inequality of students' participation.

### **3.2.5 Factors affecting the learning design of online discussion**

As pointed out in earlier sections, previous studies of the effectiveness of online discussion on students' participation and learning produced mixed results. There are different factors that could lead to either positive or negative impacts of online discussion on students' learning. It is important to consider that an online tool is a medium and vehicle for learning and the design of learning activities and overall learning environment are more crucial than the tool itself. As cited in Zhang et al. (2007), Gruber (1995) stated that "an online discussion forum itself does not necessarily change classroom practices, educators need to determine the practical ways to use it effectively to assist instruction" (p. 641). Black (2005) also commented: "it is not the technology itself but the manner in which it is applied that is most critical" (p. 15).

In a study conducted by Cacciatore (2010), the researcher claimed that a discussion board alone was not responsible for facilitating a more cognitively complex students' understanding of *Romeo and Juliet*. Cacciatore concluded that the facilitation of understanding of the literature was not attributed to the use of technology alone, but rather to the teacher's design of the online experience, as well as students' motivation to write and read well, noting "the technology just assisted the teacher and his students during the learning process" (Cacciatore, 2010, p. 343).

Many factors could affect learning results as they are investigated during a research study, including: the time of implementation of study; the length of intervention; students' prior experiences and knowledge; and technical preparation (Zhang et al., 2007). For example, in Zhang et al.'s (2007) study, it is argued that a five-week intervention was too

short to improve students' reading and grammar. Yu (2009) commented on a study that lasted a little over two months that by allocating more time, learner abilities to focus on the materials and interact with others could be better developed by the end of the course.

As presented in this literature review, there are no consistent conclusions regarding the effectiveness of online discussion on students' participation and learning outcomes. The comparison of various research findings is difficult due to the variation in study designs, instructional designs and facilitation, teacher preparation and commitment, type of technologies used and participant skills (Lipponen et al, 2003). An important result of the USA Department of Education (2009) study is that the observed benefits of online or BL are not necessarily a result of the media implemented, as the benefits could be attributed to differences in content, pedagogy or learning time. These observed advantages could also be caused by additional elements integrated into the treatment conditions, such as more time spent, materials and opportunities for collaboration (Means, Toyama, Murpy, Bakia, & Jones, 2009). Therefore, it was important to align the methodological design of the study with the instructional design of AOD activities and overall aims of the curriculum.

### **3.3 Methodological Issues in Previous Research**

Various research methodologies and approaches have been used to explore the implementation of discussion approaches on teaching reading comprehension. One common form of quantitative research is the experimental or quasi-experimental design, which has been employed by many researchers (Alfassi, 1998; Anjum & Inam Ullah, 2011; Bejarano, 1987; Fall et al., 2000; King, 1990; Saunders & Goldenberg, 1999; Stevens, 2003; Sun, 2010; Van Keer & Verhaeghe, 2005; Zhang et al., 2007). This methodological design is commonly used in to compare the effects of teaching approaches on students' reading comprehension. It involves more than one group and condition (*e.g.*, experimental and control) plus pre- and post-measurements for comparison.

Others studies employed qualitative approaches, such as the ethnographic approach (Olezza, 1999) and case study (Alvermann, 1995; Alvermann et al., 1996; Boehning, 2008; Conklin, 2005). This type of research is applied to explore student and teacher perceptions and experiences in using a teaching approach and examine student discussion and discourse in depth.

Some studies in this area utilised mixed methodologies (Mizerka, 1999) and multiple data collection methods (Billings, 1999; S. Yu, 2009; Zhang et al., 2007). In this type of research, more than one approach is applied to explore the issue under investigation in some depth and breadth than using either a quantitative or qualitative approach alone.

Lastly, meta-analyses (P. Murphy et al., 2009), reviews of intervention studies (Rosenshine et al., 1996) and reviews of research studies (Nystrand, 2006) have also been conducted in this area.

Many studies that have been conducted in this field focused on analysing discourse, discussion and student responses (Fall et al., 2000; Soter et al., 2008; Yeo & Quek, 2011), particularly research that focused on application of online discussion (T. Anderson, Rouke, Garrison, & Archer, 2001; Brown, 2002; Chen & Wang, 2009; Guan et al., 2006; Lipponen et al., 2003; Northrup, 2007; Zhu, 1996). Therefore, the discourse analysis of students' and teachers' discussions was also applied in this study to understand in-depth the students' and teachers' interaction in online discussion.

### **3.4 Summary of Literature Review**

This chapter reviewed the literature related to instructional approaches for teaching reading comprehension and the impact of using online discussion on students' reading comprehension and learning. The chapter was divided into several sections. The first section reviewed existing research on the effective approaches for teaching reading comprehension with more emphasis on group discussion. The second section focused on research that

explored the application of online discussion in teaching reading and students' learning. The chapter concluded with a discussion about theoretical lenses and methodological designs used in previous research.

Several key insights emerged from this review. First, overall, there is a lack of research focusing on investigating how AOD can support students' comprehension and learning at the secondary school level, particularly in the Saudi Arabian context. This suggested that there is a need to conduct studies focusing on how AOD could supplement and support FTF learning in secondary school, particularly on reading comprehension.

Second, it was found that there are various teaching strategies and approaches that are useful in supporting students' comprehension, including explicit and direct instruction of comprehension strategies, teacher questioning and question answering, student-generated questioning, and group discussions. Therefore, combinations of some of these strategies were applied in this study's instructional design.

Third, the review of the literature suggested that there was inconsistency about the effectiveness of AOD on students' outcomes and participation. Most studies reviewed indicated that using AOD brings about some advantages for students' comprehension and participation, and learning in general. However, some studies suggested that using AOD was not always beneficial for students' learning and participation, and there were some challenges in using such a tool. Nevertheless, one could conclude that AOD has the potential to contribute to, and complement, FTF classes by extending time for learning beyond the class, offering more time and opportunity for all students to participate, discuss, prepare their posts, and involve in social interaction.

Fourth, another major outcome of this review is that the role of the teacher in moderating students' online discussion, as well as providing effective support and instruction, is vital and has an impact on students' learning and participation. Fifth, it was found that

various mixed methods were used in previous studies, such as experimental designs, interviews and content analysis. However, there was no existing test that could be used to measure students' Arabic reading comprehension focusing on the main three levels of comprehension: literal, inferential and evaluative. Finally, the literature showed that there are various pedagogical and experimental factors that may influence the observed effectiveness of AOD activities, such as intervention design and teaching style, students' prior knowledge, the length of the study and measurements applied.

This review informed the researcher in designing the current study in various ways. First, it informed the choice of social constructivism as a theoretical framework for the study and combining group discussion with other effective teaching approaches as an instructional approach. Second, it informed the researcher about the viability and the need of using mixed methods research for examining the research problem in depth. Third, it guided the researcher in designing and blending both AOD and FTF learning to create the activities that were implemented and evaluated. Finally, and most importantly, it provided the researcher with the rationale for conducting this study. The next chapter details the methodological designs of this research, including the research paradigm, methodology, research processes, instructional design, data collection methods and analysis.

## **CHAPTER FOUR**

### **RESEARCH METHODOLOGY**

#### **4.1 Introduction**

The objective of this mixed methods research study was to examine the effectiveness of blending Asynchronous Online group Discussion with Face-to-Face reading classes on secondary school students' comprehension. It aimed to investigate how students and teachers participate and interact when they engage in AOD about reading. Further, to achieve more in-depth understanding of the usefulness and challenges of blending AOD with FTF classes, this study explored teachers' and students' perceptions of applying AOD in reading classes.

This study applied a sequential mixed-methods design, which is rooted in a pragmatic paradigm, combining quantitative and qualitative approaches. In the first part of this study, a quantitative, quasi-experimental approach was applied in order to examine the effects of blending AOD with FTF reading classes on students' comprehension. In the second part, a qualitative approach with semi-structured interviews was employed to explore students' and teachers' perceptions toward using AOD in more detail. Qualitative data were also obtained from students' and teachers' AOD transcripts. They were analysed in order to understand how participants constructed their knowledge and comprehended the readings through social interaction with peers. These research approaches will be discussed in detail in this chapter.

This methodology chapter aims to provide comprehensive descriptions of the research methodological issues and process. To achieve this aim the following sections focus on: (a) the research paradigm; (b) design of the quantitative part of the study; (c) design of the qualitative part of the study; (d) sampling and participants; (e) the instructional design of BL, including FTF and AOD activities; (f) data collection procedures; (g) quantitative and qualitative analyses of the data; (h) language translation issues; and (i) ethical considerations.

## 4.2 Research Paradigm

When researchers design empirical studies, they need to construct and justify the philosophical assumptions and paradigm that drive their choices of research methodology, data collection methods and analyses. A paradigm is a worldview, a framework and set of beliefs that inform and guide the processes and methods of conducting research (Bryman, 2003; Creswell, 2009; Guba & Lincoln, 1994; Lincoln & Guba, 1985; Morgan, 2007). One of the most comprehensive definitions of them was provided by Bryman (2003) who defined paradigm as “clusters of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how research should be done, how results should be interpreted, and so on” (p. 4). In particular, the choices of quantitative, qualitative or mixed methods approaches are influenced by the beliefs and assumptions that the researcher holds (Creswell, 2009; Lincoln & Guba, 1985).

There are three main research paradigms discussed in the literature: positivism, constructivism and pragmatism (Creswell, 2009; Lincoln & Guba, 1985; Tashakkori & Teddlie, 1998). Each of these paradigms holds some assumptions that underline the three main research methodologies. Positivism usually underlines typical quantitative research, constructivism/interpretivism assumptions are more consistent with qualitative research, and pragmatic assumptions are associated with mixed-methods approach (Creswell, 2009; R. B. Johnson & Onwuegbuzie, 2004; Mackenzie & Knipe, 2006).

Historically, there was debate about the possibility of combining both qualitative and quantitative research paradigms in a single study (R. B. Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 1998). Quantitative research was dominant and accepted in educational research until the early 1980s. Many researchers held that quantitative and qualitative approaches were incompatible and therefore it was impossible to combine the two approaches due to the differences in their underpinning philosophies. However, starting from

the 1990s, many researchers rejected this view and advocated the pragmatic position, which suggests that both quantitative and qualitative approaches are important, and could be thoughtfully combined in single research studies (B. Johnson & Christensen, 2010; Tashakkori & Teddlie, 1998).

The researcher in this study holds the pragmatic view, which shapes and influences the choice of mixed methods approach as a strategy of inquiry. In addition, it influenced the selection of the specific methods of data collection, data analysis, validation and interpretation (Creswell, 2009; R. B. Johnson & Onwuegbuzie, 2004; Onwuegbuzie & Leech, 2005).

A pragmatic view suggests that the researcher applies the combination of approaches that must appropriately answer the research questions and achieve the study purposes (Creswell, 2009; R. B. Johnson & Onwuegbuzie, 2004). Pragmatic assumptions allow the researcher to combine different methods and techniques based on the research aims and questions. According to Creswell (2009), “For the mixed methods researcher, pragmatism opens the door to multiple methods, different worldviews, and different assumptions, as well as different forms of data collection and analysis” (p. 11). Pragmatism provided this researcher with the possibilities of choosing the research methods and stances that best met the research needs and purposes of this study (Creswell, 2009; Onwuegbuzie & Leech, 2005).

In summary, the pragmatic view holds the following assumptions and beliefs: (a) both quantitative and qualitative approaches can be combined and are compatible; (b) both deductive and inductive logic are acceptable; (c) applications of objective and subjective points of views are included; and (d) values play an important role in doing research and drawing conclusions (Creswell, 2009; R. B. Johnson & Onwuegbuzie, 2004; Onwuegbuzie & Leech, 2005; Tashakkori & Teddlie, 1998). The pragmatic philosophy has two more important implications: the research questions precede, and are the foundation of the methods;



and accordingly the decision to apply either quantitative, qualitative or mixed methods depends on the research questions (Punch, 2009).

Therefore, based on these philosophical assumptions, the researcher combined both quantitative and qualitative research approaches to best answer the research questions. An overview of both research paradigms is provided in the following sections. In addition, the mixed methods paradigm is elaborated in more detail throughout the whole chapter.

#### **4.2.1 Quantitative research**

Quantitative research methodology is rooted in positivist philosophy. Positivism refers to the traditional and scientific form of research, also called the scientific method, positivist research or empirical science (Creswell, 2009), and is defined as an approach of natural science (Neuman, 2006). Positivism holds some assumptions about quantitative research that influence the choice of research methodology. These include: (a) there is a singular reality, in which the researcher starts with hypotheses and tests them (Lincoln & Guba, 1985); (b) determination (Cohen, Manion, & Morrison, 2000; Creswell, 2009; Neuman, 2006), which means that a cause determines and influences an effect (Creswell, 2009; Lincoln & Guba, 1985); (c) developing knowledge is based on careful observation and measurement of the objective reality found in the world (Bryman, 2008; Creswell, 2009; Neuman, 2006); (d) researcher values and beliefs can influence the research, and therefore, it is important for the researcher to be objective and not allow personal biases to affect outcomes (Lincoln & Guba, 1985; Neuman, 2006); and (e) the researcher starts with a predetermined theory (deductive reasoning) (Bryman, 2008; Neuman, 2006).

Researchers who hold this paradigm examine the relationship between variables, explore the causes and effects, and aims to apply reliable and valid instruments and techniques for statistical analyses (Bryman, 2008; Creswell, 2009). Examples of research methods that are based on this view are quasi-experimental study designs, surveys and

experiments, tests and scales (Creswell, 2009; Mackenzie & Knipe, 2006; Rubin & Babbie, 2010).

The researcher in this study applied a quasi-experimental quantitative design to examine the effects of using AOD on reading comprehension. Validated and reliable comprehension tests were employed to assess students' comprehension and to achieve objectivity and minimise researcher bias. Statistical analyses were applied to analyse data and report the findings of reading comprehension tests (B. Johnson & Christensen, 2010).

#### **4.2.2 Qualitative research**

Qualitative methodology is primarily rooted in social constructivism, interpretive and naturalistic paradigms (Cohen et al., 2000; Creswell, 2009; Lincoln & Guba, 1985; Neuman, 2006). Qualitative methodology holds some assumptions including conducting research in a natural setting, the 'researcher as instrument', the value of participants' meaning, reflexivity (Creswell, 2012), and subjectivity (Neuman, 2006). Qualitative research assumes that 'truths' and meanings are constructed and interpreted by the individual (D. Gray, 2009). The naturalist paradigm holds six axioms, including: (a) there are multiple constructed realities; (b) the knower and known are inseparable; (c) inquiry is value-bound; (d) time- and context-free generalisations are not possible; (e) it is not possible to distinguish between causes and effects; and (f) belief in inductive logic (Lincoln & Guba, 1985; Tashakkori & Teddlie, 1998). Examples of data collection techniques that are underpinned by this perspective are interviews, text analysis and observations (Mackenzie & Knipe, 2006).

In this study the researcher sought to understand the issues under investigation from the participants' insider perspectives. Therefore qualitative semi-structured interviews and analyses of teachers' and students' AOD transcripts were used. Direct interviews with participants and open-ended questions helped the participants expand their perspectives and views in detail (Creswell, 2009). The researcher used deductive and inductive data analysis,

combining analytical coding schemes based on the literature with emergent categories. In this part of the study, the researcher applied more descriptive and interpretive analysis looking for categories (B. Johnson & Christensen, 2010).

#### **4.2.3 Mixed methods research**

Mixed methods research refers to the application of both quantitative and qualitative methodologies in a single study (Bryman, 2008; Creswell, 2009; Denscombe, 2007; R. B. Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 1998). One of the most comprehensive definitions of this approach is provided by Creswell and Clark (2010) who defined mixed methods research: “as a methodology it involves philosophical assumptions that guide the direction of the collection and analysis of the mixture of qualitative and quantitative approaches in many phases of the research process” (p. 5). In addition, they defined it as a method of research that “focuses on collecting, analyzing and mixing both quantitative and qualitative data in a single study or series of studies” (p. 5). In their definition, they pointed out that the combination of quantitative and qualitative approaches helps to understand the research problem better than applying either single research approach (Creswell & Clark, 2010, p. 5).

This research applied a sequential mixed methods design, that is, the application of quantitative and qualitative methods in a sequence of phases (Creswell, 2009; Denscombe, 2007; Tashakkori & Teddlie, 1998). In the first part, a quantitative quasi-experimental approach was applied to explore the effect of blending AOD with FTF instruction on students’ comprehension scores. In the second part, qualitative semi-structured interviews and analysis of AOD transcripts were conducted; to explore and explain how AOD helped students’ comprehension and how they participated and interacted in AOD.

#### ***4.2.3.1 Rationale of using mixed methods methodology***

Researchers choose mixed methods approaches for different reasons. Green, Caracelli, and Graham (1989) analysed 57 mixed methodological studies and identified five broad rationales of use, including: (a) triangulation, which aims for convergence and correspondence of results from different research methods; (b) complementarity, in which one method complements, elaborates, clarifies or enhances the findings from other research methods; (c) development, which means that the researcher uses the findings of one method to develop and inform the other method; (d) initiation that seeks to discover paradoxes that help to reframe the research questions; and (e) expansion, which refers to expanding the breadth of inquiry by using different inquiry methods for different inquiry components (Green, Caracelli, & Graham, 1989; R. B. Johnson, Onwuegbuzie, & Turner, 2007).

Several reasons motivated the researcher to apply mixed methods in this study. The most important rationale was that a researcher can learn more about the research topic by combining the complementary strengths of quantitative and qualitative approaches while at the same time avoiding the weaknesses of both approaches (Punch, 2009). In the first part of this study, the researcher addressed the effect of using AOD to supplement FTF learning on students' reading comprehension by applying reading comprehension tests. In the second part, the researcher conducted detailed and in-depth interviews and content analysis of AOD to explain and understand the test results and the processes that students followed in their learning and discussion. Mixed methods provided the researcher with a more complete picture and a deeper understanding of the implementation of AOD in FTF reading classes (Creswell, 2009; Denscombe, 2007). Applying qualitative approaches helped the researcher explain the initial results generated from quantitative methods (Creswell & Clark, 2010).

The researcher's decision to apply mixed methods was also guided by the previous research conducted in this field, specifically studies that used experimental designs to

examine the effects of online discussion on students' learning and achievement (S. Yu, 2009; Zhang et al., 2007). Other studies included in the review sought to explore how learners participate, interact, collaborate, negotiate and construct their knowledge in online discussion by analyzing discussion content and posts (Brown, 2002; Chen & Wang, 2009; Guan et al., 2006; Larson, 2009; Northrup, 2007; Yeo & Quek, 2011; Zhu, 1996). Additionally, studies that purported to understand in-depth the learners' or teachers' perspectives and perceptions of applying online discussion used surveys (Brown, 2002; Conklin, 2005; Hobgood, 2007; Larson, 2009) or interviews (Armstrong, 2005; Brown, 2002; Conklin, 2005; Larson, 2009; Love, 2002). Some studies combined both quantitative and qualitative approaches to answer the research questions (Cook, 2008; White, 2006). In the following sections the design of the quantitative and qualitative parts of this study are explained in detail.

### **4.3 Design of the Quantitative Parts of the Study: Quasi-experiment**

The main quantitative strategy employed in this study was a quasi-experimental, non-randomised pre-test–post-test control group design. It is called 'quasi' because it resembles the true experimental design; however quasi-experimental study designs have treatment outcome measures and sampling units, but they do not apply random allocation of participants in experimental conditions (Rosnow & Rosenthal, 1996). There are several reasons for choosing a quasi-experimental design in this study. The first was the difficulty in randomly assigning students to experimental conditions in real school practice. A quasi-experimental design was more suitable in a school context because it was acceptable, practical and easy to integrate in the school schedule (Cohen et al., 2000; Leedy & Ormrod, 2010; Neuman, 2006; Punch, 2005).

The second reason was that this study aimed to examine the causal relationships between independent and dependent variables. The independent variables in this study were teaching and learning methods, including FTF and BL, which will be explained in Section

4.6. The students' reading comprehension achievement was the dependent variable. The hypothesis of this experimental design was that the differences observed in the students' reading comprehension scores (dependent variables) were caused by FTF or BL instructions (independent variables) (Neuman, 2006; Denscombe, 2007).

The third reason for applying the quasi-experimental design was the ability to include pre-tests. A researcher has less control of the experiment, and equalisation between groups is not achieved by randomisation (Punch, 2005). Conducting pre-tests enabled the researcher to establish the similarity of both groups in terms of their reading comprehension achievement prior to the experiment. Without the application of random assignment, there was no guarantee the two groups were the same before the experiment, nor was there a guarantee that changes in the dependent variables were not due to chance (Leedy & Ormrod, 2010). Conducting pre-tests helped the researcher to attribute the changes in dependent variables to the experiments, rather than to pre-existing differences in comprehension scores between experimental and control groups.

In this type of experimental design, the experimental and control groups are not randomly assigned, and pre- and post-tests are administered to both groups (Creswell, 2009; Neuman, 2006). A researcher compares two groups or conditions in which the independent variables are manipulated and their effects on the dependent variables measured (Cohen et al., 2000; Creswell, 2009; Denscombe, 2007; Neuman, 2006; Punch, 2005).

The quasi-experimental design as applied to this study is shown in Figure 1. Students who participated were assigned into two groups based on the existing classroom organisation. Students in the experimental (BL) group participated in BL, which applied AOD as a supplement to their normal FTF reading classes ( $n = 32$ ); students in the control (FTF) group attended only their normal FTF classroom instruction, including traditional homework

activities ( $n = 32$ ). The same pre-tests and post-tests were applied to both groups (Neuman, 2006).

<b>Experimental (BL) Group</b>	Pre-test	BL (FTF & AOD)	Post-test
<b>Control (FTF) Group</b>	Pre-test	FTF & Traditional homework	Post-test

Figure 1. The design of part one of the study: quasi-experimental design of BL.

### 4.3.1 Reading comprehension measurement

Reading comprehension tests were employed to explore the effects of blending AOD with FTF instruction on students' comprehension achievement by measuring the differences between the control and experimental groups in reading comprehension test scores. This form of testing was applied to answer the first research question: do students who participate in an AOD as a supplement to FTF learning perform better on reading comprehension tests compared with students who engage only in FTF learning? And to answer the second research question: do students in each group (FTF and BL) demonstrate significant improvement in their reading comprehension scores from pre-test to post-test? The design and implementation of this test are described in the following sections.

#### 4.3.1.1 Designing pre- and post-tests

A review of previous research in the Arabic context revealed that there were no existing reading comprehension tests to measure students' reading comprehension achievement at the first year of secondary school level that included the three levels of comprehension. Therefore, the pre- and post-test instruments were designed by the researcher, in consultation with four secondary school Arabic reading teachers and revised by a panel of

teaching reading experts – four university teachers in Saudi Arabia and three postgraduate students who had experience in teaching Arabic language in Saudi Arabia and who were completing their postgraduate studies in linguistics and education in Australian universities. The instruments were developed in stages, which included: (a) identifying the test details (objectives and number of terms); (b) creating an item matrix to detail content, form, timing and the scoring process; and (c) ensuring validity and reliability through the use of pilot tests (Cohen et al., 2000).

Each test included two texts and 17 questions. The four texts were selected from textbooks used in the first year of secondary school in Saudi Arabia. These textbooks and texts were designed and developed by the Ministry of Education of Saudi Arabia. This reading curriculum and texts are taught in all first year of public secondary schools in Saudi Arabia.

The reading comprehension tests were based predominately on Barrett's (1968) cognitive taxonomy of reading comprehension (as cited in Pearson & Johnson, 1972), but also referred to other existing comprehension taxonomies and categorisations (Ammar, 2009; DeBoer & Dallmann, 1970; Dechant, 1991; Dillon, 2007; Karlin, 1978; Morris & Stewart-Dore, 1986; Roe et al., 2010; Zintz, 1970) plus the objectives of teaching Arabic reading comprehension (Alshalan, 2008; Ministry of Education, 2008). The tests were designed to measure three main reading comprehension levels: (a) literal comprehension, referring to restating details and information that are clearly manifested in the text; (b) inferential comprehension, including inferring word meaning, understanding main and sub-ideas in the text, making inferences and drawing conclusions; and (c) evaluative comprehension, involving evaluating and analysing the author's purposes for writing the text and evidence used to support the author's ideas, author's feelings, and distinguishing between the facts and



opinions in the texts. The three main comprehension levels were sub-divided into the following strategies for the pre- and post-tests:

- (a) Literal level (4 questions, 5 marks): restating literal information and details (4 questions, 5 marks)
- (b) Inferential level (8 questions, 8 marks): inferring main and sub-ideas (2 questions, 2 marks); drawing conclusions (4 questions, 4 marks); inferring word meaning (2 questions, 2 marks).
- (c) Evaluative level (5 questions, 5 marks): evaluating the purposes of writing the text (*e.g.*, to inform, persuade or entertain) (1 question, 1 mark); evaluating the type of evidence used by the author (1 question, 1 mark), identifying the author's feeling in the text (1 questions, 1 marks); distinguishing between the facts and opinions in the text (2 questions, 2 marks).

Overall, each test included two types of questions: 15 multiple choice questions and two short answer questions. The total score was 18 marks. An answer sheet was developed for multiple choice questions and a rubric of possible short answers was also prepared. (See Appendices A and B for Arabic and English versions of the tests and Arabic version of the text passages.)

#### ***4.3.1.2 Piloting the tests***

The research instruments were piloted to evaluate reliability and validity, observe the time to complete, and to explore potential problems respondents may face in terms of instrument wording or formatting (Colton & Covert, 2007). The processes of piloting reading tests were as follows.

##### ***4.3.1.2.1 Test validity***

Validity is important and required for effective research (Cohen et al., 2000) and is a central aspect of research measurement (Neuman, 2006; Punch, 2005). Validity refers to the

extent to which tests measure what they aim and claim to measure (Cohen et al., 2000; Neuman, 2006; Punch, 2005). Content validity (Punch, 2005) was one of the main methods for validating the research instrument in this study; that is, the instrument must cover and measure the content and domains that are intended to be covered and assessed (Cohen et al., 2000). In this study, to achieve the content validity the professional and expert judgement method was applied (S. Chandra & Sharma, 2004; Cohen et al., 2000). The tests were given to a panel of 11 experts in teaching Arabic reading (four Arabic language teachers, four university teachers, and three postgraduate students) who provided written professional opinions and suggestions to improve the tests and ensure they measured students' reading comprehension. In addition, the expert panel evaluated the clarity, structure, language and comprehension levels of questions, and their validity in measuring these skills. Based on the experts' comments, the researcher amended the tests in terms of question order, adding or deleting some questions, and rewording some. For example, teachers on the expert panel suggested adding some questions that focused on identifying the authors' feeling and tone in the text. In addition, some questions were reworded to be more specific, clear and accurate, for example, correcting the Arabic grammatical structure of some questions.

#### *4.3.1.2.2 Test reliability*

Test reliability refers to the stability and consistency of tests and measurements (Neuman, 2006). A test-retest approach was used to measure the reliability of the tests and check if they produced similar results at different times (Cohen et al., 2000; Neuman, 2006). The same reading comprehension tests were administrated to 70 secondary school students in order to measure the internal consistency. Those 70 students who participated in the pilot tests were chosen from the same city where the main study was conducted. The interval time between test and re-test administration was two weeks, in line with the recommended optimal

interval between one to two weeks (Hartas, 2010). Subsequently, the researcher correlated test one and test two to evaluate reliability.

The results of the test-retest indicated a reliability coefficient of  $r = 0.86$  for the pre-test and  $r = 0.84$  for the post-test. This indicated that these tests were sufficiently reliable and consistent across time, as  $r > 0.7$  is considered reliable and acceptable (Domino & Domino, 2006). Regarding the timing, the pilot tests established that it took students 40 to 45 minutes to complete either test.

#### **4.4 Design of the Qualitative Part of the Study**

Although quantitative approaches helped determine the effects of blending AOD with FTF classes on students' learning outcomes, they did not give detailed explanations and interpretations of the findings regarding the effects of such BL on reading scores, the learning process or participants' experiences (Creswell & Clark, 2010). Therefore, qualitative approaches were also used to investigate the participants' perspectives and experiences of using AOD to support FTF classes in more detail and depth. There were two research questions in particular that were best investigated through qualitative data – the sixth and seventh questions that focus on teachers' and students' perceptions of using AOD in reading classes – which were addressed by collecting data through semi-structured interviews. In addition, the third, fourth and fifth research questions also required collecting qualitative data about learning and teaching processes and participants. These data were obtained by collecting participants' messages in AOD. Qualitative analysis techniques included thematic analysis of interviews and content analysis of students' and teachers' online discussions.

##### **4.4.1 Semi-structured interviews**

A semi-structured interview technique was chosen in order to arrive at a deeper understanding of students' and teachers' perspectives about online reading activities. In a semi-structured interview, the researcher has an interview guide that includes a list of

questions or specific topics to be addressed, but participants have flexibility in replying to the question (Denscombe, 2007). In this type of interview, the researcher can also ask emergent questions not included in the schedule (Bryman, 2008). Semi-structured interviewing was helpful for this part of the research because, when details are needed, an interview is considered a suitable method to examine feelings, opinions and experiences in an in-depth way. Semi-structured interviews provide the interviewee with a chance to answer questions in more detail. In addition, semi-structured interviews provide more flexibility and the interviewee has opportunities to develop ideas (Denscombe, 2007). Interviews help participants to express their interpretation of the world in which they live and describe how they view and regard situations from their own perspectives (Cohen et al., 2000).

The semi-structured interview questions were developed by the researcher, based on previous studies that investigated participants' perceptions of using online discussion, specifically aspects of online discussions that helped students to learn (Conklin, 2005; Qenaey, 2008), perceptions of enjoyment (Hobgood, 2007), benefits and advantages of using online discussion (Blankson & Kyei-Blankson, 2008; Qenaey, 2008; Wu & Hiltz, 2004), and difficulties and challenges that students face when learning through online discussion (Blankson & Kyei-Blankson, 2008; Qenaey, 2008; Wu & Hiltz, 2004). The interview questions were also developed in light of the current research aims and questions. The development of interview questions focused on students' perceptions of usefulness of AOD on their participation, learning, comprehension, attitude toward reading and the challenges they faced. The students' interview protocol involved open-ended questions in order to encourage students to provide detailed explanations of their experiences and opinions about using AOD in reading classes.

The draft questions were given to three experts (university teachers) to ensure they were appropriately designed, clear and not leading. This pilot process contributed to changes

and revisions made by the researcher. For example, the experts considered some questions leading and so were changed. In order to check the content and clarity of interview questions and timing, the interview protocols were piloted with two students and one teacher respectively.

The students' interview questions focused on students' perceptions of: (a) feelings of enjoyment when using AOD; (b) the differences between FTF and AOD learning methods; (c) perceived influence of AOD on participation; (d) aspects that helped student learning; (e) usefulness of this experience on students' comprehension and learning; (f) benefits and preferred aspects of AOD; (g) challenges, weaknesses and difficulties of the AOD; and (h) overall suggestions for improving AOD. In addition, other questions emerged during interviews, particularly to obtain more explanation and clarification. (See Appendix C for the student interview questions).

The teachers' interview protocol included 16 questions, which focused on: (a) teachers' background and experiences in using online learning and discussion; (b) perceptions of using AOD as a teaching method in reading classes; (c) perceived usefulness and advantages of AOD on students' attitudes, comprehension, learning and participation; (d) challenges of using AOD; and (e) suggestions for improving the implementation of AOD. (Appendix D presents the teacher interview questions.)

#### **4.4.2 Students' and teachers' AOD transcripts**

The second source of qualitative data was the students' and teachers' AOD transcripts. These group discussions were conducted to obtain rich in-depth data that helped to understand learning and teaching processes: how students constructed their own knowledge through social interaction and discussion with others in their groups and how teachers facilitated students' learning and participation. There are many previous studies that also utilised participants' discussions as a source of data (T. Anderson et al., 2001; Grisham & Wolsey,

2006; Gunawardena, Lowe, & Andeson, 1997; Hara et al., 2000; Larson, 2009; Lipponen et al., 2003; Northrup, 2007; Pena-Shaff & Nicholls, 2004; Zhu, 1996). In the current study discussion transcripts were analysed using content analysis techniques that are described in more detail in Section 4.8.4 below.

#### **4.5 Sampling and Participants**

Purposive sampling was applied in this study to choose the schools and assign students to both conditions (control and experimental groups). Purposive sampling describes situations where participants are chosen from the population based on particular criteria and for specific purposes (Cohen et al., 2000; Neuman, 2006). In this study, the participating school was selected as it had adequate resources for online discussion, particularly computers and an Internet connection. Two schools were selected for the pilot study and one for the main study. The study targeted students in their first year of high school (aged 15 to 17), who received FTF reading classes within the Saudi Arabia Department of Education (public school).

Access to the sample was gained through the following steps. First, permission was granted to conduct this study from the Department of Education, who provided a list of potential secondary schools in which to conduct the research. Second, school principals, teachers, and students' parents were contacted (through the Department of Education) for their willingness to participate in this study. Third, five schools that agreed to participate were given a survey regarding the availability of computer resources and Internet connection, in line with purposive sampling requirements. An additional survey was given to first year students of the five secondary schools regarding the availability of computer resources and Internet connection at home. Fourth, a school that fulfilled the selection criteria and whose students reported to have adequate computer resources and Internet connection at home was selected for the main study.

Sixty-four students from this secondary school who fulfilled the purposive sampling criteria were chosen to participate in this study. Those 64 students were assigned to one of the two groups: control FTF group ( $n = 32$ ) and experimental BL group ( $n = 32$ ), using a quasi-experimental design, which accounted for classroom logistics. Students in the experimental group were chosen from two existing classes (Classes A and B) and control group students were chosen from two other classes (Classes C and D), according to the existing class organisation. The teacher and researcher further divided the online discussion groups into five small groups for collaborative online discussion based on existing class organisation. Although, all existing classes (A, B, C and D) were taught with the same materials and curricula, students in these four classes were not taught together. Students who were selected to participate in the BL group (from classes A and B) were taught separately in FTF sessions and after the class time they were mixed into the five AOD groups. Students selected to be in the FTF group (from classes C and D) were taught separately in FTF classes.

Two teachers from the selected school participated in this study. Teacher 1 (T1) taught Arabic reading in the AOD and FTF classes; Teacher 2 (T2) taught a computer subject (IT), and agreed to provide technical support to all participants (teachers and students), helping T1 moderate the AOD sessions.

For the qualitative data collection, 16 secondary school students from the experimental group (50% of students who participated in BL (FTF and AOD) were invited to participate in interviews. The two teachers were also interviewed.

Table 1

*Summary of Information about Study Participants*

<b>Participants</b>	<b>Total</b>	<b>Experiment</b>	<b>Interviews</b>
Students	64	32 (control group) 32 (experimental group)	16 (experimental group)
Teachers	2	1 Arabic reading teacher 1 IT teacher	2

#### **4.6 Instructional Design of AOD Activities and Traditional Homework Activities**

Instructional design is defined by Smith and Ragan (2005) as: “the systematic and reflective process of translating principles of learning and instruction into plans for instructional materials, activities, information resources and evaluation” (Smith & Ragan, 2005, p. 4). Instructional design and planning of AOD activities as well as traditional homework activities were part of this research methodology. Instructional design processes were applied to prepare and develop the AOD activities used by the students and teachers in the experimental group as well as to prepare traditional homework activities that were given to FTF group. Based on the design processes that were conducted prior to the study and described below the researcher, in collaboration with teachers, developed AOD forums and homework activities and implemented them in the main study.

The design of online AOD activities in this study was based on principles of social constructivist theory and existing literature on effective approaches to reading comprehension, which indicate: (a) learning occurs when students involve in social interaction with others (Tracey & Morrow, 2006; Vygotsky, 1978); (b) discussion approaches support reading comprehension (P. Murphy et al., 2009); (c) support from teachers and student peers, guidance and scaffolding are important in enabling students’ learning and construction of knowledge (Groundwater-Smith, Ewing, & Le Cornu, 2011; Tracey & Morrow, 2006; Vygotsky, 1978); (d) online discussion should mediate learning and help students interact with others (Dawley, 2007); and (e) providing explicit instructions, adequate modelling and feedback scaffolds students’ reading comprehension (Duffy, 2009; Tracey & Morrow, 2006).

Thus, the instructional design of the AOD activity aimed at scaffolding students’ learning in reading classes by providing them with the appropriate environment to enable: (a) social interaction through participation in an AOD; (b) sharing ideas and knowledge through



interactive and cooperative online discussion; (c) responding to other learners' comments, providing and receiving feedback from others; (d) actively engaging in building their understanding and comprehension of the readings through the discussion; (e) receiving adequate support and scaffolding from teachers and peers; (g) having enough time to reflect; and (f) having clearly available instructions, guidance, modelling and examples (Conklin, 2005; Vygotsky, 1978). The following sections explain the phases of instructional design followed in the current study.

#### **4.6.1 Phases of instructional design**

The researcher and secondary school teachers participating in the study collaboratively developed the instructional design of the learning activities. For this purpose, the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model of designing was adopted by following three main phases: Analysis; Design and Development; and Implementation (Jolliffe, Ritter, & Stevens, 2001; Koontz, Li, & Compore, 2006).

##### ***4.6.1.1 Phase one: Analysis***

The first design stage was analysis, meaning a needs assessment to determine what resources students required to complete the activity and achieve the instructional goals. This analysis included school affordance of technology, teachers and students' technological skills, and audit of current teaching reading practices. This analysis was done through teacher and student surveys. The needs analysis revealed that most schools had sufficient computer resources and Internet connection, and while all teachers and students had experience using computers and social online discussion forum, they had not applied these to, or experienced, online discussion for teaching and learning. The needs analysis also provided the researcher with an understanding of the current teaching reading practice in the school. Based on this analysis, the researcher chose one school through the Department of Education, conducted

two training sessions to prepare students and teachers for using AOD, and planned the learning activities.

#### ***4.6.1.2 Phase two: Design and development***

The second stage was designing, developing and creating the goals, objectives and outcomes, material content, instruction questions, media and activities specific to students and teachers. In this phase, the learning activities were jointly planned, prepared, developed and written by the researcher and participant teachers. The design and plan of the learning activities included the following elements.

##### ***4.6.1.2.1 Goals and aims***

The researcher and teachers developed the main aims of AOD activities in light of the goals for first year secondary school reading comprehension instruction. These included improvements across the three main reading comprehension levels – literal, inferential and evaluative – as well as encouraging students’ social interaction and collaboration with their peers about their reading.

The aims of traditional homework activities given to the FTF group were to improve students’ understanding of the three main reading comprehension activities.

##### ***4.6.1.2.2 Objectives and outcomes***

The objectives of the AOD activities were written in collaboration with participant Arabic reading teachers. There were five main objectives for the 12 AOD activities over six weeks. These objectives were that students should be able to: (a) answer questions related to information directly stated in the selected texts (literal comprehension); (b) understand and infer the main idea and sub-ideas of the selected text (inferential comprehension); (c) make inferences and draw conclusions from the selected text (inferential comprehension); (d) evaluate the author’s purpose of writing the text, facts and opinions and supporting

evidence (evaluative comprehension); and (e) discuss and interact with others about their understanding of the three levels of comprehension and strategies for each level.

The objectives and outcomes of traditional homework activities given to the FTF group included the same objectives listed above with exception of (e), as the FTF group did not engage in discussion about the text.

#### *4.6.1.2.3 Content*

Based on the teacher's weekly plan, there were seven texts chosen to be included in the AOD (Table 2) and traditional homework activities. These seven texts were chosen from 12 texts that were taught during the semester by teachers. The texts were chosen from textbooks developed by experts in the Ministry of Education in Saudi Arabia and used for first year secondary school reading curriculum at all Saudi Arabian secondary schools at the same time. These text types included four expository texts, plus three biographies and short stories. Students in both BL and FTF groups were given the same seven texts Teachers introduced these topics in FTF classrooms for both groups and then gave students in both groups after class activities focusing on these topics as described below. The topics are presented in Appendix E.

#### *4.6.1.2.4 Discussion and traditional homework questions*

For this study, 12 questions were designed to be posted in three sub-sets at different times during the AOD for the BL group and to be answered as traditional homework for the FTF group (Table 2). Students in the BL group were required to answer these questions in the AOD forum and engage in the 12 online group discussions about them, while students in the FTF group were required to answer these questions as traditional homework individually without involving in discussion. These questions focused on the three main comprehension levels: (a) the literal level – recalling information that was mentioned in the text in an explicit and direct way (three AODs for the BL group and three questions as traditional homework for

FTF group); (b) inferential – meaning that is not stated directly in the text such as inferring main ideas and sub-ideas, drawing conclusions and inferring word meaning (six AODs versus six questions); and (c) evaluation and critical reading – identifying the author's message and purpose of writing the text, evaluating the supporting evidence and distinguishing between facts and opinion (three AODs versus three questions). These questions and examples are presented in Appendix E.

#### *4.6.1.2.5 AOD website, content and structure*

AOD was blended with FTF classroom learning for the experimental group. The AOD website was developed for the purpose of this study. The website was designed and developed by a private company in Saudi Arabia who had experience in designing education websites. The AOD website was divided into different sections, which included a student guidance forum and five group forums. The content of the AOD website was developed by the researcher and participant teachers.

In the AOD, the teacher posted questions, instructions and examples in the student guide forum (SGF). Each student accessed the discussion forum using a username and password. Each student was allowed to participate in only one group forum. Students received training during the first two weeks of semester to assist them on how to participate in the AOD.

#### *4.6.1.2.6 Students' roles*

Students in the experimental group of this study were required to participate actively in social interaction and discussion with others in the AOD form in order to construct their knowledge and comprehend the text. Students' roles and tasks should be clearly facilitated and described by the instructor in online learning (Conklin, 2005; Goodyear et al., 2001; Merrill, 2003). Therefore the researcher and teachers provided students with clear instructions to facilitate their active participation, learning, online discussion and interaction. For example,

in some discussions, students were required to: (a) participate in the AOD within their groups; (b) collaborate with their peers in small groups; (c) read the text, peers' answers, contributions and comments; (d) post one or two messages answering the teachers' questions about the text; (e) respond and comment on peers' posts, no more than three times; and (f) ask no more than two questions about the text. The reason for limiting students' messages was to minimise over-participation rates as students had other school commitments. Students' roles were described during the FTF classes and in the SGF. In addition, students were reminded of the various roles at the beginning of every AOD. Examples of lesson design and student roles are presented in Appendix F.

Students in the FTF control group were required to attend FTF classes and complete traditional homework activities, including reading explanations, models and examples of comprehension strategies and answering teacher questions in homework sheets.

#### *4.6.1.2.7 Teachers' roles*

The teacher plays a vital role in the online discussion environment (Conklin, 2005), and teachers who moderate online learning activities may play different roles. In this study the roles of the teachers were identified as design and instruction, discourse facilitation and direct instruction (Anderson et al, 2001). These roles were also based on Goodyear and colleagues' (2001) identification of online teacher roles that included content and process facilitator, technologist, advisor, assessor, designer and manager (Goodyear et al., 2001). Under the category of design and instruction, the teachers' roles were to: help the researcher train students and identify their needs; group students into small groups; design the lessons in collaboration with the researcher; set curricula; and identify the participation time and limits. In order to facilitate the students' discourse, teachers were asked to model the discussion by providing examples on how students should answer questions and respond to others, encouraging students to participate and discuss with others to promote the discussion. These

examples were developed prior to the study in collaboration with the researcher. In the category of direct instruction, teachers posted questions in every AOD to start discussion about the readings, model strategies, give feedback to the students' answers and learning, and clarify any misconceptions in students' understanding (T. Anderson et al., 2001). Examples of lesson design and teachers roles are presented in Appendix F.

In addition to classroom teaching, the teachers' role for the FTF group was to provide students with the homework sheet that included explicit explanations and examples of comprehension strategies, and questions focused on these strategies. The teacher asked students to read the information and answer questions at home. It is important to note here that the researcher was neither a teacher nor an administrator in the educational system of this study context.

#### ***4.6.1.3 Phase three: Implementation of learning activities***

In the third stage, the researcher and teachers implemented and delivered the FTF and BL instruction to students in both groups. First, FTF instruction was given to both groups. Then, after-class activities were administered: traditional homework for the control group (FTF) and AOD activities for the experimental (BL) group. Appendix F presents examples of learning activities and lesson designs that were applied in this study for AOD.

##### ***4.6.1.3.1 Face-to-Face classes (both groups)***

In the first lesson, students in both experimental (BL) and control (FTF) groups received the same traditional FTF reading instruction. These FTF instructions were developed and taught by the teacher as normal without intervention from the researcher. In the FTF classes the teacher introduced and explained the reading topic to the students to activate their prior knowledge. The teacher asked students some questions about the topic, and then asked them to read the text silently and identify difficult words and the main ideas of the text. Then, the texts were read aloud, first by teachers then by selected students. The teacher also

provided an explanation of some comprehension strategies, such as identifying main ideas and drawing conclusions. The teacher also gave students the opportunity to ask questions about the text, and then the teacher asked questions to assess their understanding of the text focusing, for example, on drawing conclusions, making inferences from the text and other comprehension strategies. In the final part of FTF class, if there was time, students were given opportunities to read the text aloud. After class activities for both groups are described as follows.

#### *4.6.1.3.2 AOD activities for the BL group*

In the second phase of the learning activities, after participating in FTF classes explained above, students in the BL group participated in AOD sessions. The teachers posted some questions on the AOD, which focused on the text read in the FTF class. The teacher also provided an example of how to answer the question and gave instructions on how students should participate. Students were also given some explicit instructions and examples of comprehension strategies. Students were required to post their thoughts and answers and discuss the text with others. In addition, students were asked to respond to their peers in the group. Students could participate in the AOD at any time and from anywhere.

There were 12 AODs (labeled as discussion D1 to D12) conducted over six weeks. Each discussion was conducted over 35 minutes during school time and was open for three days for discussion outside school times. First, during the 35 minutes teachers gave students the opportunity to access the AOD forum through the school computer lab to answer the teacher question and read models and examples provided. Second, the teacher invited students to access and complete the AOD activities outside school time including one day in the weekend. AODs were open for student access for six days every week. (See Table 2 and Appendix E for more details).

Table 2

*Organisation of the Asynchronous Online Discussion over 6 Weeks*

<b>Week</b>	<b>Disc. No.</b>	<b>Topic</b>	<b>Focus</b>	<b>No. of days</b>	<b>Time in school</b>
1	1	Happiness	Drawing conclusion	3	35 mins
	2	Ebn Taimiah	Literal	3	35 mins
2	3	Fingerprints	Inferring text ideas	3	35 mins
	4	Fingerprints	Evaluating text purposes	3	35 mins
3	5	Loyalty	Drawing conclusion	3	35 mins
	6	Unity among Gulf citizens	Literal	3	35 mins
4	7	Unity among Gulf citizens	Inferring text ideas	3	35 mins
	8	A shiny page of our scientific history	Inferring word meaning	3	35 mins
5	9	A shiny page of our scientific history	Evaluation of text purpose, evidence (facts and opinions), and author's feeling	3	35 mins
	10	King Fisal describes his great father	Inferring word meaning	3	35 mins
6	11	King Fisal describes his great father	Literal	3	35 mins
	12	King Fisal describes his great father	Evaluation of text purpose and evidence	3	35 mins

*4.6.1.3.3 Traditional homework activity for control group*

After participating in FTF classes students in the control group were given homework sheets that included similar questions, examples and explicit explanations of comprehension strategies that were given to the BL group in the AOD forums (Table 2). They were required to do their tasks in a traditional way by reading the examples and explanations and then completing and answering the questions that were given to the BL group in online forums, but to be answered in their individual homework sheet at their own pace.



## 4.7 Data Collection Procedures

The data collection procedure consisted of two phases: (a) the pilot study; and (b) main study (Table 3).

### 4.7.1 Pilot study

The pilot study was run for the first three weeks in the second semester of 2010. The researcher piloted the study instruments, including the reading comprehension tests created in the design phase described above, and interview protocols. The AOD was also piloted with four students in an online discussion activity for one week.

### 4.7.2 Main study

The five parts of the main data collection were conducted during the second semester of 2010 and the first semester of 2011. These included training, pre-tests, FTF and 12 AODs, post-tests and interviews.

Table 3

*Data Collection Procedures*

Time	Procedures	Duration (weeks)
Second semester 2010	Pilot study	3
Second semester 2010–first semester 2011	1. Training	1
	2. Pre-tests	1
	3. FTF and AOD	6
	4. Post-tests	1
	5. Conducting interviews	2

#### 4.7.2.1 Training weeks

The researcher conducted two training sessions for students because students had not used online discussion in learning, and this was a new mode of learning for them. Thus, it was important to support their learning by training them on how to learn through the AOD. The training and support aimed to help students learn how to access and participate in the AOD and to explain the new roles that they should play in the online environment, as learner

support and scaffolding is an important element of effective online learning environments (Oliver, 1999).

The first session of training focused on how to log on and access the forum. In the second session, the workshop concentrated on how to participate in the forum, for example, posting a message, and editing and replying to others. Students were given a range of practical examples. This training took place in the school computer lab. Due to time and school schedule limitations, online training was restricted to one week (4 hours).

In addition, the two participating teachers were involved in two teacher training sessions, as they had no previous experience teaching by using AOD. The teachers needed this training to help them understand how they could facilitate students' comprehension through moderating online discussion group forums. Moreover, this training focused on clarifying new roles for the teachers, which are different from their roles in FTF classes. For example, it was explained that the teacher's role in the forum should be less of an expert deliverer of knowledge and controller and more of a 'scaffolder', facilitator and moderator of co-participants in learning (Dabbagh, 2003). The "e-moderation processes" were explained and discussed with teachers based on Salmon's five-stage model that included: 1) access and 2) motivation – by providing sufficient time and support for learners to access the course materials and motivating them to do so; 3) online socialisation – by encouraging students to know each other and giving them the chances to interact, information exchange – by encouraging and directing students to share information and interact about course materials 4) knowledge construction – by encouraging learners to actively participate in constructing their own knowledge; and 5) development – by introducing learning activities that help learners to be more independent and responsible for their own learning and the learning of their group as a whole (Salmon, 2000). The researcher also provided teachers with other resources to help

them improve their knowledge about online discussion moderation and application of comprehension strategies.

#### ***4.7.2.2 Conducting pre-tests***

Pre-test data was collected during the first week of the study. This phase included administering the reading comprehension tests designed by the researcher (see Section 4.3.1, for details).

#### ***4.7.2.3 AOD and FTF activity implementation***

In this stage, students and teachers participated in the FTF and AOD activities as discussed in Section 4.6.1.3 above. Teachers initiated each AOD and supported students' learning. As shown in Appendix E, teachers focused on one topic and one level of reading comprehension per discussion. For example, teachers posted one question in the first discussion (D1) focusing on making inferences and drawing conclusions from the 'Happiness' text (inferential comprehension). In the second discussion (D2), the teacher's question focused on recalling literal details from the text (literal comprehension). At this stage also students in the FTF group were provided with the traditional homework sheet as discussed in Section 4.6.1.3.3.

#### ***4.7.2.4 Conducting post-tests***

The post-tests were given to the students in the last week of the study. These tests were based on texts that had similar characteristics to the texts discussed in the classes. These post-tests measured the same comprehension strategies as the pre-tests. (See Section 4.3.1 for details.)

#### ***4.7.2.5 Conducting interviews***

The researcher conducted semi-structured interviews with a subset ( $n = 16$ , 50%) of experimental group participants after the students had completed the AOD, and with two

teachers. Interviews were conducted in the final two weeks of the study. All interviews were conducted at school so participants would feel comfortable and be in a familiar environment.

Student interviews took around 35 to 40 minutes each and teacher interviews took approximately 50 to 60 minutes each. At the beginning of each interview, the researcher started by building trust and rapport with the interviewees to make them feel comfortable and welcomed. Subsequently, the researcher introduced the study to the participants. This was followed by a description of the confidentiality of participation in this study and an assurance that all the data collected would be treated confidentially and used strictly for research purposes. The first part of the core interview about the topic consisted of general questions regarding participants' prior experience using online discussion. Then the researcher moved on to the main questions that focused on the interviewees' perceptions toward applying online discussion in teaching and learning reading comprehension. The researcher then concluded the interview by thanking the interviewees for their participation. All students and teachers were given the opportunity to provide more details as well as to ask questions. The Arabic and English versions of interview protocols are provided in Appendices C and D.

A tape recorder was available for recording the interviews, and nine students and two teachers approved recording. In addition, field notes were taken during these interviews. These field notes were helpful for recording and interpreting data, especially from the five interviewees who did not give permission to use the tape recorder. All interviews were conducted in Arabic, the participants' mother tongue. The interview data were transcribed and analysed in Arabic. The quotes that are included in this thesis were translated into English.

#### **4.8 Quantitative and Qualitative Analyses of the Data**

This section explains the data analysis approaches and techniques that were applied in this research. Mixed data analyses were conducted in order to answer the research questions, including quantitative and qualitative approaches (Creswell, 2009). First, quantitative

analysis included descriptive and inferential statistical analysis of the reading comprehension tests (Neuman, 2006) and quantitative analysis of AOD (Titscher, Meyer, Woodak, & Vetter, 2007). Second, qualitative thematic analyses were performed on transcripts of interviews and participants' AOD (Creswell, 2009). The criteria of trustworthiness of qualitative analysis were discussed and checked (Lincoln & Guba, 1985). Combining both analysis approaches helped the researcher to examine how participants participated in AOD and how this impacted the students' participation and comprehension as well as to understand in-depth from the participants' perspectives how AODs helped them construct their knowledge. In this section, the issue of translation from Arabic language (home language) to English is also discussed.

#### **4.8.1 Reading comprehension tests analysis**

To analyse the quantitative reading comprehension tests, SPSS version 19.0 software was utilised. In the pilot stage, statistical analyses were used to assess the reliability of tests and then to explore the impacts of BL on students' comprehension scores in the main study. The reading comprehension tests were analysed by employing the correlation coefficient, one-way analysis of covariance (ANCOVA), paired sample *t*-tests and Wilcoxon signed rank test. First, to evaluate the test-retest reliability of the reading comprehension tests, the Pearson's correlation coefficient (*r*) analyses were used. A preliminary check was conducted to ensure the correlation analysis assumptions were met. The Pearson's correlation coefficient was used for data that met the assumptions of normal distribution. The Pearson's coefficient was computed to assess the test-retest reliability of the overall test scores that met the assumptions (Coakes, Steed, & Price, 2008; Field, 2009).

Second, descriptive statistics and ANCOVA analyses were conducted to answer the research question: do students who participate in AOD as a supplement to FTF learning perform better on reading comprehension tests compared with students who engage only in FTF learning? Descriptive statistics were used to summarise the results of the pre- and post-

test scores for both groups, including score means, standard deviations, adjusted means and standard errors. In this study, adjusted means refers to the value of the group mean adjusted for the effect of the covariate (Field, 2009). In order to explore the differences between the pre- and post-test scores for BL and FTF groups, ANCOVA analysis was employed, as ANCOVA is used to compare several means and adjust the effect of one or more variables (called covariates) (Field, 2009). In this study, ANCOVA adjusted the means of the post-test reading comprehension scores for any differences in pre-test scores between control and experimental groups (Ary, Jacobs, Razavieh, & Sorensen, 2009). A preliminary check was conducted to ensure the ANCOVA assumptions were met, including normality, linearity, independence of the covariate and treatment effect, homogeneity of regression slopes and homogeneity of variance (Field, 2009). The effect size was reported and measured by using a partial  $\eta^2$  analysis that was interpreted based on Cohen's guidelines for effect size: small (0.01), medium (0.06), and large (0.14) (Field, 2009; C. Gray & Kinnear, 2012; Pallant, 2010). As some experts argue that ANCOVA is robust to the violation of normality (Rutherford, 2012), in addition to the use of ANCOVA, the researcher ran non-parametric analyses with data that violated the normality assumptions, as listed in Appendices J, K, L and M.

Third, paired sample *t*-tests and Wilcoxon signed rank test were used to answer the second research question: do students who participate in each group (FTF and BL) demonstrate significant improvement in their reading comprehension scores from pre-test to post-test? This analysis aimed to compare pre- and post-tests scores within groups and assess the effectiveness of FTF and BL interventions separately without making comparison of the two groups. A paired sample *t*-test was used for comparison of normally distributed variables, and a non-parametric Wilcoxon signed rank test was used for variables that were not normally distributed thus. The effect size was reported and measured by using *r* analysis that was

interpreted based on Cohen's guidelines for effect size: small (0.10), medium (0.30), and large (0.50) (Field, 2009).

#### **4.8.2 Qualitative interview analysis**

Interviews were analysed using the following procedure. Data were first prepared and organised, with interviews and field notes transcribed in Arabic as Microsoft Word® documents. Transcripts were then read several times to gain familiarity and a general sense of the data, to have an overall understanding and identify the emerging concepts related to the current research. During this stage, the researcher took notes and memos about general categories found in the data (Babbie, 2010; Boeije, 2010; Creswell, 2009).

In the third stage, the researcher then did a detailed analysis through coding and categorising. Coding refers to the process of arranging and organising data into chunks or segments before bringing meaning to the data; it involves classifying the data from the text into categories and labeling them (Creswell, 2009). Data were coded into main and sub-categories by using emerging categories and were based on the semi-structured interview questions in line with the main research questions and literature reviews. An example of a main category is "perceived participation and enjoyment". During the coding stage, other relevant sub-categories emerged, such as students' understanding of participation and perceived changes in students' learning. Frequencies of each category were reported in this analysis (Babbie, 2010; Boeije, 2010; Creswell, 2009; Mile & Huberman, 1994), for example, the number of students who perceived AOD as an enjoyable experience. The main and sub-categories of students' and teachers' interviews are listed in Tables 4 and 5. During the analysis process, the researcher displayed main categories and sub-categories through use of visual presentations, including diagrams and matrices.

The fourth stage of analyses included interpretation of the data, drawing conclusions, making inferences and offering explanations (Creswell, 2009; Marshall & Rossman, 2011;

Punch, 2005). The data were reported and presented in a narrative way in order to answer the research questions.

Table 4

*Main Categories and Sub-categories That Emerged From Student Interviews*

<b>(Code) Main category</b>	<b>Sub-categories</b>
<b>(P) Perceived Participation</b>	(PO) Perceived participation in AOD (PF) Perceived impact on students' participation in FTF classes (PU) Students' understanding of participation (PFH) Contributing factors for high participation (PFL) Contributing factors for low participation
<b>(E) Perceived Enjoyment</b>	(EO) Perceived overall enjoyment (EF) Perceived factors for enjoyment (EFN) Perceived factors for non-enjoyment
<b>(L) Perceived Learning</b>	(LR) Perceived usefulness of AOD on students' reading comprehension strategies (LA) Students' approaches to learning about the text in AOD (LF) Students' perceptions of factors that helped students to learn (LC) Students' perceptions of changes in their learning (LTR) Students' perceptions of teachers' roles in their learning
<b>(D) Perceived Difficulties</b>	(D) Perceived difficulties faced during learning in AOD



Table 5

*Main Categories and Sub-categories That Emerged From Teacher Interviews*

<b>(Code) Main category</b>	<b>Sub-categories</b>
<b>(E) Prior Experience:</b> Teachers' prior experiences of using AOD	(EO) Experiences with social online discussion (EOL) Experiences with online discussion for teaching
<b>(M) Teaching Methods:</b> Using AOD as a teaching method	(MP) Increased student participation (MA) New assessment methods of students' learning (MG) Providing students with group learning experiences (MT) Teacher exposure to technology-based pedagogies
<b>(RC) Reading Comprehension:</b> AOD and reading comprehension strategies	(RCU) Usefulness for comprehension (RCL) Learning from each other (RCE) Learning from example (RCA) Active learning (RCS) Learning strategies
<b>(R) Teachers' Roles:</b> Perceived teachers' roles in AOD	(RQ) Asking weekly questions about topics (RE) Encouraging students to post and participate (RF) Providing students with feedback (REX) Providing examples on how to answer questions
<b>(C) Challenges:</b> Perceived challenges of applying AOD	(CE) Lack of prior experience in the field (CW) The intrinsic workload of this approach to teaching (CT) Limited time for teaching comprehension strategies adequately (CF) Students' unfamiliarity with AOD
<b>(S) Suggestions:</b> teachers' suggestions for improving using AOD	(ST) Training (SM) Increased number of moderators and teachers (SS) More subjects (SW) Teacher workload (SR) Students' responsibility (SC) Comprehension level

**4.8.3 Trustworthiness of qualitative data**

To assess reliability and validity in qualitative research, researchers apply trustworthiness criteria (Bryman, 2008). The inclusion of trustworthiness criteria is pivotal for researchers in qualitative fields to minimise the potential biases that may exist during the research process (Bloomberg & Volpe, 2008). The following criteria, explained further below, were applied in this study: (a) credibility that is equivalent to internal validity; (b) transferability that is parallel to external validity in a quantitative approach; and

(c) dependability that is equivalent to reliability (Bloomberg & Volpe, 2008; Bryman, 2008; Denscombe, 2007; Lincoln & Guba, 1985).

#### ***4.8.3.1 Credibility***

Credibility refers to the extent that the researcher can ensure the data are accurate, credible, believable, trustworthy and appropriate from the standpoint of the researcher, the participants and the reader (Bloomberg & Volpe, 2008; Denscombe, 2007). In order to assess the credibility of qualitative analysis in this study, member checking and peer debriefer techniques were applied.

First, for the member check, the two teachers and those students who agreed to spend more time reading, revising and checking their interview transcripts were given their transcripts and a summary of the initial analysis, and asked to carefully check, revise, correct, give feedback and/or elaborate on their responses. For example, the Arabic teachers added some comments that related to the usefulness of using AOD in teaching reading comprehension.

Second, the researcher met regularly with a colleague (“peer debriefer”) to discuss the data analysis, categories, findings, interpretations and conclusions, and provide suggestions about the analysis and findings (Creswell, 2009). In this study, the peer debriefer was a Saudi doctoral student in Australia who had prior experience in social research, specifically using technology in learning and teaching Arabic reading at the secondary school level. Moreover, he had experience with qualitative analysis. Teachers and the peer debriefer reviewed the process of analysis, coding and development of the categories. For example, the emerged categories from the interviews were reviewed and checked regarding definitions, indicators and examples of these categories. The researcher’s interpretations and findings were discussed and clarified during this review process.

#### **4.8.3.2 Transferability**

Transferability refers to what extent the findings in particular instances could be transferred to other comparable cases (Bloomberg & Volpe, 2008; Denscombe, 2007). Qualitative research tends to be based on a small number of cases, which leads to the question of how generalisable the results are. Qualitative researchers approach generalisation in a different way; that is, transferability.

Transferability of qualitative research findings can be achieved by providing detailed, sufficient and appropriate information that enables the reader to infer the possibilities, relevance and applicability of findings to other similar situations (Denscombe, 2007). In addition, providing a detailed description of the phenomenon helps the reader to develop a deep understanding of the situation and context under investigation (Denscombe, 2007). The researcher in this study attempted to address the issue of transferability by providing the reader with detailed descriptions of the context of this study (*e.g.*, secondary school and Arabic reading classes), the participants (*e.g.*, teachers and students) throughout this thesis (Bloomberg & Volpe, 2008), and the instructional design of the intervention itself (*e.g.*, why and how instructional decisions were made).

#### **4.8.3.3 Dependability**

Dependability in qualitative research parallels reliability in quantitative research (Neuman, 2006). It refers to the fact that the findings are consistent and dependable with data collected in the research (Bloomberg & Volpe, 2008; Neuman, 2006). This criteria can be assessed using inter-rater reliability (Bloomberg & Volpe, 2008). In this study, emergent categories (either main categories or sub-categories) were given to another rater to check the correctness and adequacy of coding. Checking if each fragment of the transcripts were coded and labeled correctly was an important step for establishing reliability (Boeije, 2010). Inter-rater reliability of the developed interview codes was established by following several steps.

1. The researcher coded two interviews and identified the emergent categories and sub-categories.
2. The researcher met with the other rater to discuss these codes and categories.
3. Both raters applied these codes and categories with one student and one teacher interview.
4. The two raters met and discussed difficulties and disagreement in their coding.
5. The researcher made changes based on the discussions with the other rater and developed the final coding schema.

One example of the changes made is that perceived participation was divided into two specific categories including perceived participation in AOD and perceived participation in FTF classes.

#### **4.8.4 Content analysis of students' and teachers' AOD**

Content analysis was adopted in this study to analyse AOD transcripts. Content analysis is a research technique for studying or analysing communication or content of text (qualitative materials) in a systematic, replicable and objective manner to make interpretation and inferences from the text (S. Chandra & Sharma, 2004; V. Chandra, 2004; D. Gray, 2009; Krippendorff, 2004; Titscher et al., 2007; Weber, 1990).

This methodology was used in many studies to analyse the content of online discussion and electronic conferencing (T. Anderson et al., 2001; Garrison, Anderson, & Archer, 2000; Gay, Pena-Shaff, & Martin, 2001; Gunawardena et al., 1997; Henri, 1992; Pena-Shaff & Nicholls, 2004; Zhu, 1996), and some studies have specifically applied this methodology to analyse students' online discussion at the secondary school level (Chen & Wang, 2009; Guan et al., 2006; Yeo & Quek, 2011).

The analysis of AOD in this study involved quantitative (manifest) and qualitative (latent) content analysis (Monette, Sullivan, & DeJong, 2010).

*Manifest coding* focused on the surface structure level of coding that dealt with counts of messages, themes and words as they appeared in the text and that could be countable. It dealt with non-inferential meaning (Babbie, 2010; Monette et al., 2010; Neuman, 2006). An example of this type of coding is the number of students' and teachers' messages and themes per week. *Latent coding* focused on the deep and implicit message and the meaning of the content regarding unobserved concepts (Babbie, 2010; Neuendorf, 2002; Neuman, 2006). Latent coding focused on making inferences from the manifest content, "reading between the lines" (Holsti, 1969) and revealing the deeper meaning (Kanuka, Rourke, & Laflamme, 2007). In the latent coding the researcher focused on the students' themes that reflected their social interaction with others and knowledge construction, for example, scaffolding and reflection. It also focused on the teachers' themes that described their methods of moderating and scaffolding students' online discussion, for instance, modelling and providing direct instruction.

Applying both quantitative and qualitative techniques of content analysis provided a deeper and more complete understanding of students' and teachers' participation in online discussion. Previous research that investigated online conferencing and discussion combined quantitative and qualitative content analyses (Hara et al., 2000; Larson, 2009; Northrup, 2007; Zhu, 1996). In addition, the analysis included both deductive and inductive coding processes. Deductive analysis focused on predetermined categories based on pre-developed frameworks, while inductive analysis focused on emergent categories (Schreier, 2012). These procedures are explained next.

#### ***4.8.4.1 Content analysis procedures***

The following steps were applied in order to conduct the content analysis of students and teachers' online discussion in this study.

#### *4.8.4.1.1 Identifying aims of content analysis*

This content analysis aimed to answer the following research questions: (Question 3) how do students participate in AOD about a reading from a set text? (Q 4) how do students interact in the AOD about reading a reading from a set text? (Q 5) how do teachers facilitate students' comprehension during AOD about reading from a set text?

#### *4.8.4.1.2 Identifying the sample*

In this content analysis, the sample is the teachers' and students' messages that were posted during the twelve AODs over six weeks. The researcher analysed the content of all the messages and themes posted by the participants. Reviewing previous studies that applied content analysis showed that some researchers analysed all the discussion content quantitatively and chose some parts of the discussions for the qualitative analysis (Hara et al., 2000; Zhu, 1996). In contrast, other researchers analysed all posted content (Northrup, 2007). Therefore, the researcher decided to analyse all the content relating to the nature and organisation of the AOD in this study, across the entire period. The separate phases of AOD in this study focused on the three main comprehension levels, literal, inferential and evaluative. These main comprehension levels were divided into sub-strategies such as inferring main ideas and word meaning. Therefore, choosing only some discussions for the analysis would not provide a comprehensive understanding of the AODs across the three levels of comprehension and changes over time.

#### *4.8.4.1.3 Choosing the unit of analysis*

The researcher used two units of analysis: a complete message and a theme. First, the entire message was used to analyse and report the quantitative part of the AOD that represented participation rates (*e.g.*, number of messages posted in every discussion). Second, the transcripts were coded using thematic units for a more qualitative analysis. The thematic unit has been used as the unit of analysis by different researchers (Henri, 1992; Newman et

al., 1995; Zhu, 1996). A thematic unit refers to “...a single thought unit or idea unit that conveys a single item of information extracted from a segment of content” (Budd, Thorp, & Donohue, 1967, p. 34, as cited in Rourke, Anderson, Garrison, & Archer, 2001). After reading through the AOD transcripts, the researcher found that the thematic unit of analysis was appropriate for the purpose of this study as some posted messages could contain one or multiple thematic units. For example, one message contained only one theme, which restated information found directly in the text, “Ebn Taimiah was a great scientist, worked hard, wrote lots of books [**literal comprehension level**]” (Student 5, Group 2, D2). Another student posted a message that contained two thematic units (two ideas), mentioning social cues (greetings) and relating the information to another literary source: “Hello, my friends [**greeting**], I read one book about this famous scientist” [**connect to another source**] (Student 4, Group 3, D9).

#### *4.8.4.1.4 Conducting quantitative content analysis*

Quantitative content analysis focused on: (a) students’ and teachers’ participation rates that included analysis of the total number, percentage and average of students’ and teachers’ messages and themes that were posted in each discussion; (b) the total number, percentage and average number of students who participated in the 12 AODs; and (c) the total number, percentage and average of teachers’ messages and themes during the 12 AODs.

#### *4.8.4.1.5 Conducting qualitative content analysis*

The researcher applied three coding schemes in order to conduct a qualitative content analysis: (a) students’ discussion coding scheme; (b) teachers’ discussion coding scheme; and (c) reading comprehension coding scheme.

***Coding scheme for analysing students’ AOD.*** This study is based on social constructivist theory, which suggests that learning and construction of knowledge is a social activity and occurs when a learner is involved in social interaction, collaboration and

negotiation with others. This theory suggests also that a learner needs support, guidance and scaffolding from others to learn (Tracey & Morrow, 2006; Vygotsky, 1978). Therefore, the focus of part of the content analysis was on how students constructed knowledge and comprehended the text through social interaction with others in their groups.

Different researchers have investigated the social aspects of knowledge construction and based their content analysis on a constructivist view of learning. An example is Zhu's (1996) coding scheme, which was adapted in this study. The researcher used some categories from Zhu's (1996) coding scheme, which identified two interaction types, four participant categories and eight message categories. The focus in this study was on the message categories only. The Zhu (1996) categories of messages included two types of questions, answer, information sharing, discussion, comment, reflection and scaffolding. To analyse the present AOD, the researcher started coding the discussions based on the Zhu (1996) coding scheme; some categories were adopted and modified based on the nature of this study, including questions, answer, reflection and scaffolding categories. In addition, the researcher adapted some categories from Northrup's (2007) study, which included asking and answering question, and agreement. The Henri (1992) definition of social cues was also adapted and applied in this study.

Through the coding process and discussion, some categories emerged, were modified or defined and others were not included. Explanations of each category, specific indicators and examples were also created. The final version of the coding scheme for the students' discussion included eight main categories: answering questions; starting discussion questions; questions seeking support; scaffolding comprehension strategies; agreement and disagreement; reflection; encouragement; and social cues (Appendix G). The definitions, indicators and examples of these new and modified categories are also explained in Appendix G.



***Coding scheme for analysing teachers' AOD.*** The teachers' roles and involvement in the facilitation of online discussions are important and critical. According to Anderson and colleagues' (2001) coding scheme of teaching presence, teachers' roles are divided into three major categories: instructional design and organization; facilitation of discourse; and direct instruction. They developed a model for investigating and measuring teacher presence in computer conferencing. This model has been adopted and modified in this study to investigate and analyse the teachers' presence and roles in facilitating students' discussions and learning (Appendix H).

The first category – design and organisation – focuses on the teachers' role in planning and designing the course, organising the students' participation, and supporting it by providing guidelines on participation time and limits. The second category – discourse facilitation – focuses on the type of teacher discussions that supported students' interest, motivation and sustained discussions. In this study, discourse facilitation focused on teachers' messages that encouraged, thanked and acknowledged students' participation, as well as asking questions during the discussions to encourage more participation, identifying areas of agreement and disagreement, and creating a climate for learning and collaboration. The third category – direct instruction – refers to the teachers' instructions and teaching strategies that scaffolded students' learning and comprehension. In this study, this category focused on teachers' questions that started and directed the discussion. This category also included providing explicit explanation and modelling of the comprehension strategies, giving feedback about students' answers and clarifying and diagnosing any misconceptions.

In this study some sub-categories that emerged during the coding process were added under the direct instruction category. These involved modelling the strategy, providing explanation of the comprehension strategy and giving feedback, and social cues were added to

the discourse facilitation category. The examples in these modified categories were selected from the discussions in this study. The adapted coding scheme is presented in Appendix H.

***Coding scheme for analysing reading comprehension levels.*** Barrett's (1968) taxonomy of reading comprehension levels (as cited in Pearson & Johnson, 1972), and other comprehension taxonomies discussed in Chapter 2, were adapted in order to code and analyse the reading comprehension strategies that were used and applied by students and teachers in their online discussion. This coding scheme involved the literal, inferential and evaluative comprehension levels. The first level, literal, included recalling, locating and recognising details. For example, restating names of main characters in the texts. The second main category, inferential comprehension, included drawing conclusions and inferring main ideas. The third category, evaluative or critical comprehension, included examples such as distinguishing between facts and opinion; recognising the author's purpose in writing the text and why the author wrote the text; identifying the tone and feeling of the author; identifying the evidence used by author to support the text ideas; and distinguishing between facts and opinion. Appendix I presents the applied and modified comprehension coding scheme, with definitions, indicators and examples.

#### *4.8.4.1.6 Establishing inter-coder reliability of content analysis*

A test of inter-coder reliability was conducted to validate the modified and additional categories from the selected coding scheme. In the first phase of assessing the inter-coder reliability, the researcher coded some weeks' discussion using these coding schemes then discussed these codes with another coder to check the clarity of explanation, definitions and examples of codes and developed categories. The second coder was chosen to assist in the coding process due to qualifications and experience: a bachelor degree in teaching Arabic language; a Masters degree in education from an English speaking country; completing a PhD in Education focusing on teaching the Arabic language; and having a background in teaching

Arabic reading in Saudi schools. Establishing the reliability of these coding schemes was done according to the following steps.

1. A different coder coded part of the discussions independently based on initial comprehension coding schemes. These processes were conducted in Arabic. This step assisted the researcher in revising and assessing the reliability of the schema prior to application to all discussions.
2. The percentage of agreement was then calculated, representing the total number of cases divided by the number of agreements between coders. Eighty themes were coded to check the students' discussion coding scheme reliability and 60 themes for the reading comprehension coding scheme. For the teachers' discussion coding scheme, both coders coded 70 themes. The initial percentages of agreement between coders were 73%, 73% and 75% for students, teachers and comprehension coding schemes, respectively.
3. Both coders then discussed the disagreements and difficulties they faced while coding the transcripts. After the discussions, some categories and codes were changed, specified, added or deleted. It is important to mention here that both coders agreed that the nature of this study (Arabic context) is different to other previous research regarding its context and language. After review some changes and modifications were made to the students' discussion coding scheme. For example, the code "comment" in the initial coding scheme was changed and modified to be "agreement" and "disagreement" to make it more specific and clear for the coders, and the "scaffolding" categories were divided into two specific codes, "scaffolding comprehension strategies" and "encouragement". In addition, some indicators and examples were modified to suit the nature of this study, which focused on reading comprehension strategies. Regarding the teachers' discussion coding scheme, sub-categories were

added under the direct instruction category, such as “modelling” and “providing an explanation of a strategy”. For the comprehension coding scheme, some examples were added to clarify the categories. Both coders agreed that more examples and accurate definitions were needed to clarify the categories.

4. Both coders then conducted a second phase of coding. This increased the percentage of agreement for the three coding schemes to 83%, 81% and 84% for the students’ discussion (both coders coded 80 themes), teacher coding scheme (coded 70 themes) and reading comprehension coding scheme (coded 70 themes), respectively. These results indicated an acceptable level of agreement for the research purposes.
5. In the final step, both coders discussed any remaining disagreements in categories. They agreed that the main reason for these disagreements was the lack of the clear examples that are related to this study and discussion about comprehension. For the remaining disagreement, both coders agreed on rewording some category names, rephrasing some definitions and adding some indicators and clear examples to reach agreement about categories.

#### *4.8.4.1.7 Quantitative analysis of students’ and teachers’ discussions*

To compare the students’ participation and teachers’ involvement across the AODs, statistical analyses were performed. They were chosen according to the nature of the data and the type of analysis.

First, the Wilcoxon signed-ranked test was performed to compare the number of messages posted in discussion 1 (D1) versus discussion 12 (D12). This test was conducted to explore the changes that occurred between the first and the last discussions in students’ participation rates and to help the researcher understand how students participated in AOD. This test is used with non-parametric data to compare between two related samples. It is

employed as an alternative to a dependent *t*-test when the data violate the assumption of normality (Field, 2009).

Second, the Cochran's *Q* test was applied to compare the number of students who posted answers across the discussions that focused on literal, inferential and evaluative comprehension strategies. The assumptions of the Cochran's *Q* test were examined before conducting the test. These included: (a) multiple observations of the same subjects (related sample), that is, the same student posting messages in different discussions; and (b) response variables are binary, that is, the variables are nominal (dichotomous) and only include two possible values as responses (0 = no, student did not post an answer; 1 = yes, student posted an answer).

Third, the Friedman test was applied to compare between the number of students' themes across the comprehension levels. "The Friedman test is used to compare two or more related samples and is equivalent to repeated measure or within subject [analysis of variance] ANOVA" (Coakes et al., 2008). Before conducting the tests the following assumptions were examined: (a) multiple observations of same subjects (related sample, as defined above); (b) normality, as the data are not parametric, they are not normally distributed, which violates the one-way repeated measure ANOVA assumptions; and (c) the data to be analysed are measured in a continuous scale. Therefore the Friedman test was used as an alternative to ANOVA in this case.

#### **4.9 Language Issues**

The researcher conducted this study in Saudi Arabia where the mother language is Arabic. An authorised translator translated and confirmed the reading comprehension and interview instruments into English. The online discussion and interviews were transcribed in Arabic. In addition, reading comprehension tests and interview questions were administrated in Arabic. The coding of categories and themes was conducted by the researcher in both

English and Arabic and checked by one Arabic postgraduate student who speaks both languages. The translation of reading comprehension tests from Arabic to English, examples and quotations used in the content analysis coding schemes and the Results chapter was done by the researcher and checked by one Arabic postgraduate student who speaks both Arabic and English.

#### **4.10 Ethical Considerations**

Ethical issues are extremely important in educational and social research. Ethical dilemmas include informed consent, privacy, anonymity and confidentiality (Cohen, Manion, Morrison, 2000, Bryman, 2008). The researcher obtained ethics approval for this research from the Human Ethics Committee, University of Sydney (Appendix W). In addition, the researcher accessed and obtained approval through the Department of Education in Saudi Arabia. School principals, teachers and students' parents who agreed to participate were given forms offering details about the study and participation and to obtain their approval. These forms involved a Participation Information Statement, Participant Consent Form and Parent Consent Form for students, as they were minors. These forms focused on different ethical dimensions including: (a) study details and description; (b) researcher details; (c) instrument descriptions; (d) confidentiality of participation and participants' details; (e) description that participation was completely voluntary; (f) the benefits of study for the participants; and (g) results presentation.

The advantages for students of participating in this experiment were described in the Parent Participation Information Statement. It was stated that by participating in this study, students would learn how to use online discussion in their learning. It was mentioned that although the researcher could not guarantee or promise that the student would receive any benefits from this study, it was possible that engagement and interaction with peers may impact the participants' reading comprehension, discussion and collaborative skills.

It was also explained that students who participated in online discussion (the experimental group) may receive some benefits that students in the control group may not. To address these issues, teachers planned to extend some online discussions lessons with both groups, including students in the control group, during the second semester.

Teachers requested one condition in order to conduct this study with their students. This condition was to limit the online discussion times to only six weeks as students had other tasks and homework that they needed to complete. Therefore, the total duration of online discussion was six weeks.

#### **4.12 Summary of the Methodology Chapter**

This chapter described and discussed the research design and methodology applied in this study. In the first section, the researcher described and justified the research methodology and paradigm, mixed methods methodology, and explained the assumptions that underpinned the choice of this paradigm. In the second section, the research data collection methods, including quantitative and qualitative approaches, were presented. In the third section, the sampling and participant details were outlined. In the fourth section, the instructional design of online discussion activities was explained in detail. In the fifth section, the research procedures were outlined, followed by the data analysis processes, including quantitative and qualitative techniques, and language issues. Finally the ethical considerations were illustrated.

In the following chapters, the results of this research will be presented, including comprehension tests, participation in AOD, discussion types and interview findings.

## **CHAPTERS FIVE to NINE**

### **RESEARCH FINDINGS: INTRODUCTION**

Chapters 5 to 9 present the findings of the data analysis. Chapter 5 presents the analysis and findings of the reading comprehension tests that examine the effects of blending AOD with FTF classes on students' reading comprehension achievement (between- and within-groups comparison). Chapter 6 includes the findings of the content analysis of students' discussions, presenting first the students' participation and then their interactions in AOD. Chapter 7 reports the findings of content analysis of teachers' online discussions, focusing on teachers' participation and facilitation of students' discussions. The findings of students' interviews are presented in Chapter 8, reporting the students' perceptions of using AOD in their participation and learning in reading classes. Chapter 9 presents teachers' interviews, including teachers' perceptions of using AOD in teaching reading classes.

#### **Restatement of Research Questions and Methods Matrix**

There are seven main questions informing this study. The methods used to address them are outlined in a methods matrix below (Table 6).



Table 6

*Methods Matrix for the Study*

<b>Research Question</b>	<b>Method</b>
1. Do students who participate in AOD as a supplement to FTF learning perform better on reading comprehension tests compared with students who engage only in FTF learning?	Comparing reading comprehension post-test scores for BL (experimental) and FTF (control) groups
2. Do students in each group (FTF and BL) demonstrate significant improvement in their reading comprehension scores from pre-test to post-test?	Comparing reading comprehension pre-test and post-test scores for each group BL (experimental) and FTF (control) groups
3. How do students participate in AOD about a reading from a set text?	Content analysis of students' online discussions
4. How do students interact with others in AOD about a reading from a set text?	Content analysis of students' online discussions
5. How do teachers facilitate students' comprehension during AOD about a reading from a set text?	Content analysis of teachers' online discussions
6. What are the students' perceptions of the usefulness of using AOD on their learning and reading comprehension?	Analysing students' interviews concerning their views on this form of learning practice
7. What are the teachers' perceptions of the usefulness of using AOD on teaching and learning in reading classes?	Analysing teachers' interviews concerning their views on this form of learning and teaching practice

## CHAPTER FIVE

### EFFECT OF BLENDING AOD WITH FTF ON STUDENTS' READING COMPREHENSION ACHIEVEMENT

This chapter presents the reading comprehension test results aimed at answering the first and second research questions. First, descriptive results including means, standard deviations and adjusted means are presented in order to summarise the comprehension scores according to the type of teaching and learning approaches. Subsequently, analysis of covariance (ANCOVA) results are reported to answer the first research question examining the effect of blending AOD with FTF learning on students' overall and sub-levels of reading comprehension post-test scores compared with FTF learning.

Third, in order to answer Question 2 examining the difference on overall and sub-level comprehension scores before and after the experiment for each group, both paired sample *t*-tests and Wilcoxon signed rank tests are reported. For the normally distributed<sup>2</sup> variables (overall and inferential comprehension), the paired sample *t*-test was applied for comparison. For the variables (literal and evaluative comprehension) that are not normally distributed, a non-parametric Wilcoxon signed rank test was used in place of the *t*-test (Appendices J, K, L and M).

#### 5.1 Effect of BL on Overall Comprehension Scores

As shown in Table 7, the adjusted mean of the BL group (experimental) overall comprehension post-test scores was higher than the adjusted mean of the control group. The ANCOVA results revealed that pre-reading comprehension scores (covariate) were significantly related to students' post-reading comprehension scores,  $F(1, 61) = 26.53$ ,  $p < 0.05$ ), with a large effect size,  $\eta p^2 = 0.303$ . The ANCOVA results suggested that there was no

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<sup>2</sup> **Normal distribution** refers to continuous probability distributions that are characterised by bell-shaped curve and symmetric. This shape implies that the majority of scores lie around the centre of the distribution.

statistically significant effect of implementing BL on the students' post-reading comprehension scores after controlling the effect of overall pre-reading scores,  $F(1, 61) = 2.36$ ,  $p > 0.05$ , with a small effect size,  $\eta p^2 = 0.037$ . These results indicate that integrating AOD with FTF learning did not significantly improve students' overall comprehension scores compared with the FTF instruction. (See more detailed analyses in Appendix J.)

Table 7

*Descriptive Statistics for Students' Overall Pre- and Post-test Reading Scores*

Groups	n	Pre-test		Post-test		
		M	SD	M	SD	Adjusted mean
Experimental (BL)	32	11.31	2.22	13.09	2.08	12.97
Control (FTF)	32	10.84	2.48	12.09	2.49	12.22

*Note 1.* Adjusted mean refers to the groups' means after controlling for the effects of covariate on the dependent variable (pre-test scores). *2.* Maximum overall score = 18.00.

### 5.1.1 Comparison of overall comprehension scores before and after the experiments for both groups

Table 8 presents the paired sample  $t$ -test results of the comparison pre- and post-test overall comprehension scores for the control group (FTF). The results of the paired sample  $t$ -test revealed that there was significant difference on overall comprehension scores from pre-test ( $M = 10.84$ ,  $SD = 2.48$ ) to post-test ( $M = 12.09$ ,  $SD = 2.49$ ),  $t(31) = -2.64$ ,  $p < 0.05$ ,  $r = 0.43$ . These results suggest that the students who participated in the FTF group demonstrated a significant improvement from pre-test to post-test for overall comprehension scores.

Table 8

*Comparison of Overall Comprehension Scores Before and After for the FTF Group: Paired Sample t-Test*

	Paired Differences			t	df	Sig. (2-tailed)
	M	SD	SD. Error			
Pair 1 overall pre-test compared with post-test (FTF)	1.25	2.67	0.473	-2.642	31	0.013

Table 9 presents the paired sample  $t$ -test results of the comparison pre-test and post-test of overall comprehension scores for the experimental (BL) group. The results of the paired sample  $t$ -test revealed that there was significant difference on overall comprehension scores from pre-test ( $M = 11.31$ ,  $SD = 2.22$ ) to post-test ( $M = 13.09$ ,  $SD = 2.08$ ),  $t(31) = -6.29$ ,  $p < 0.05$ ,  $r = 0.75$ ). These results suggest that the students who participated in the BL group demonstrated a significant improvement from pre-test to post-test for overall comprehension scores.

Table 9

*Comparison of Overall Comprehension Scores Before and After for the BL Group: Paired Sample  $t$ -Test*

	Paired Differences			$t$	$df$	Sig. (2-tailed)
	$M$	$SD$	$SD. Error$			
Pair 1 overall pre-test compared with post-test (BL)	1.78	1.60	0.283	-6.293	31	0.000

## 5.2 Effect of BL on Students' Sub-level Comprehension Scores

This section presents ANCOVA analysis (between groups), the paired sample  $t$ -test and Wilcoxon signed rank tests (within groups), in order to examine the effects of blending AOD with FTF learning on students' reading comprehension scores for each of the three literal, inferential, and evaluative levels.

### 5.2.1 Effect of BL on literal comprehension

Findings revealed that the adjusted mean of the BL group in post-test literal scores was higher than the adjusted mean of the control group (Table 10). The ANCOVA results indicated that the pre-reading literal scores (covariate) were significantly related to the post-reading literal scores,  $F(1, 61) = 10.61$ ,  $p < 0.05$ , with a large effect size,  $\eta p^2 = 0.148$ . However, the ANCOVA results revealed that there was no significant effect of BL on students' post-test literal comprehension scores after controlling for the effect of pre-test

literal scores,  $F(1, 61) = 0.49$ ,  $p > 0.05$ , with a small effect size,  $\eta p^2 = 0.008$ . Thus, integrating AOD with FTF reading instruction did not significantly improve students' literal comprehension scores compared with FTF learning (Appendix K).

Table 10

*Descriptive Statistics for Pre and Post-test Literal Comprehension Scores*

Groups	n	Pre-test		Post-test		
		M	SD	M	SD	Adjusted mean
Experimental (BL)	32	3.78	1.01	4.47	0.76	4.46
Control (FTF)	32	3.69	1.15	4.31	0.82	4.33

*Note.* Maximum literal score = 5.

### 5.2.2 Comparison of literal comprehension scores before and after the experiments for both groups

Table 11 presents a Wilcoxon signed rank test applied to examine whether there was a significant difference between the pre- and post-test literal scores for the control group. The results of Wilcoxon tests revealed that there was a significant difference in literal comprehension scores from pre-test ( $Mdn = 4$ ) to post-test ( $Mdn = 5$ ),  $z = -2.56$ ,  $p < 0.05$ ,  $r = 0.32$ . These results suggest that the students who participated in the FTF group demonstrated a significant improvement from pre-test to post-test for literal comprehension scores.

Table 11

*Comparison of Literal Comprehension Scores Before and After for the FTF Group: Wilcoxon Signed Rank Test*

	z	Asymp. Sig. (2-tailed)
Literal pre-test compared with post-test scores (FTF)	-2.561	0.010

As shown in Table 12, the same test was applied to the pre-test and post-test literal scores for the BL group, revealing a significant difference on literal comprehension scores from pre-test ( $Mdn = 4$ ) to post-test ( $Mdn = 5$ ),  $z = -3.62$ ,  $p < 0.05$ ,  $r = 0.45$ . These results

suggest that the students who participated in the BL group demonstrated a significant improvement from pre-test to post-test for literal comprehension scores.

Table 12

*Comparison of Literal Comprehension Scores Before and After for the BL Group: Wilcoxon Signed Rank Test*

	<i>z</i>	<b>Asymp. Sig. (2-tailed)</b>
Literal pre-test compared with post-test scores (BL)	-3.620	0.000

### 5.2.3 Effect of BL on inferential comprehension

As shown in Table 13, the adjusted mean of the BL group scores was higher than the adjusted mean of the control group scores in the post-test inferential scores. The ANCOVA findings indicated that pre-reading inferential scores (covariate) were significantly related to post-reading inferential scores,  $F(1, 61) = 28.49$ ,  $p < 0.05$ , with a large effect size,  $\eta p^2 = 0.318$ . However, the ANCOVA results showed that there was no significant effect of BL on students' post-test inferential comprehension scores after controlling for the effect of pre-test inferential scores,  $F(1, 61) = 0.83$ ,  $p > 0.05$ , with a small effect size,  $\eta p^2 = 0.013$ . These results indicate that students who used AOD in combination with FTF classes did not improve significantly in inferential comprehension post-test scores compared with the students who used only FTF instruction (Appendix L).

Table 13

*Descriptive Statistics for Pre and Post-test Inferential Comprehension Scores*

<b>Groups</b>	<i>n</i>	<b>Pre-test</b>		<b>Post-test</b>		
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>Adjusted mean</i>
Experimental (BL)	32	5.22	1.77	5.78	1.41	5.70
Control (FTF)	32	4.87	1.52	5.34	1.43	5.43

*Note.* Maximum inferential score = 8.

### 5.2.4 Comparison of inferential comprehension scores before and after the experiments for both groups

Table 14 presents results of the paired sample  $t$ -test comparing pre- and post-test inferential comprehension scores for FTF. The results revealed that there was no significant difference on inferential comprehension scores from pre-test ( $M = 4.87$ ,  $SD = 1.52$ ) to post-test ( $M = 5.34$ ,  $SD = 1.43$ ),  $t(31) = -1.63$ ,  $p > 0.05$ ,  $r = 0.28$ . These results suggest that the students who participated in the FTF group did not demonstrate a significant improvement from pre-test to post-test for inferential comprehension scores.

Table 14

*Comparison of Inferential Comprehension Scores Before and After for the FTF Group: Paired Sample  $t$ -Test*

	Paired Differences			$t$	$df$	Sig. (2-tailed)
	$M$	$SD$	$SD. Error$			
Pair 1 inferential pre-test compared with post-test (FTF)	0.47	1.63	0.287	-1.631	31	0.113

Table 15 presents the paired sample  $t$ -tests of the comparison pre-test and post-test of inferential comprehension scores for the BL group. The results revealed that there was significant difference on inferential comprehension scores from pre-test ( $M = 5.22$ ,  $SD = 1.78$ ) to post-test ( $M = 5.78$ ,  $SD = 1.41$ ),  $t(31) = -2.56$ ,  $p < 0.05$ ,  $r = 0.42$ . These results suggest that the students who participated in the BL group demonstrated a significant improvement from pre-test to post-test for inferential comprehension scores.

Table 15

*Comparison of Inferential Comprehension Scores Before and After for the BL Group: Paired Sample  $t$ -Test*

	Paired Differences			$t$	$df$	Sig. (2-tailed)
	$M$	$SD$	$SD. Error$			
Pair 1 inferential pre-test compared with post-test (BL)	0.56	1.24	0.219	-2.560	31	0.016

### 5.2.5 Effect of BL on evaluative comprehension

Findings revealed that the adjusted mean of the BL group in post-test evaluative comprehension scores was higher than the adjusted mean of the control group (Table 16). The ANCOVA results indicated that pre-reading evaluative scores (covariate) were significantly related to the post-reading evaluative scores,  $F(1, 61) = 4.68, p < 0.05$ , with a medium effect size,  $\eta p^2 = 0.071$ . However, the ANCOVA results showed that there was no significant effect of BL on students' post-test evaluative comprehension scores after controlling for the effect of pre-test evaluative scores,  $F(1, 61) = 2.75, p > 0.05$ , with a small effect size,  $\eta p^2 = 0.043$ . This indicates that students who used BL did not improve significantly in evaluative comprehension post-test scores, compared with the FTF learning group (Appendix M).

Table 16

#### *Descriptive Statistics for Pre and Post-test Evaluative Scores*

Groups	<i>n</i>	Pre-test		Post-test		
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>Adjusted mean</i>
Experimental (BL)	32	2.31	0.82	2.84	0.99	2.84
Control (FTF)	32	2.28	0.85	2.44	0.98	2.44

*Note.* Maximum evaluative score = 5.

### 5.2.6 Comparison of evaluative comprehension scores before and after the experiments for both groups

As shown in Table 17, a Wilcoxon signed rank test was applied to examine whether there was a significant difference between the pre- and post-evaluative comprehension for the FTF group. The results of Wilcoxon tests revealed that there was no significant difference in evaluative comprehension scores from pre-test ( $Mdn = 2$ ), to post-test ( $Mdn = 2$ ),  $z = -0.63$ ,  $p > 0.05$ ,  $r = 0.08$ . These results suggest that the students who participated in the FTF group



did not demonstrate a significant improvement from pre-test to post-test for evaluative comprehension scores.

Table 17

*Comparison of Evaluative Comprehension Scores Before and After for the FTF Group: Wilcoxon Signed Rank Test*

	<i>z</i>	<b>Asymp. Sig. (2-tailed)</b>
Evaluative pre-test compared with post-test scores (FTF)	-0.632	0.527

As shown in the Table 18, a Wilcoxon signed rank test was also applied to examine whether there was significant difference between the pre- and post-evaluative comprehension for the BL group. The results of Wilcoxon tests revealed that there was a significant difference on evaluative comprehension scores from pre-test ( $Mdn = 2$ ), to post-test ( $Mdn = 3$ ),  $z = -2.78$ ,  $p < 0.05$ ,  $r = 0.35$ . These results suggest that the students who participated in the BL group demonstrated a significant improvement from pre- to post-tests for evaluative comprehension scores.

Table 18

*Comparison of Evaluative Comprehension Scores Before and After for the BL Group: Wilcoxon Signed Rank Test*

	<i>z</i>	<b>Asymp. Sig. (2-tailed)</b>
Evaluative pre-test compared with post-test scores (BL)	-2.782	0.005

### 5.3 Summary of Reading Comprehension Test Findings

The results of ANCOVA tests that measured the effect of blending AOD with FTF learning on students' comprehension compared with FTF learning indicate that students who were taught with the blended mode of learning did not improve significantly more than FTF learning in the overall comprehension post-test scores, or the literal, inferential or evaluative

comprehension sub-levels. These results suggest that blending AOD with FTF learning was not more or less effective than FTF learning.

The results of comparing pre- and post-test comprehension scores for each group showed that students who participated in the FTF group demonstrated a significant improvement from pre-test to post-test for overall and literal comprehension scores. However, there was no significant improvement in their inferential and evaluative comprehension scores. For the BL group, the results showed that students who participated in AOD as well as FTF instruction demonstrated a significant improvement from pre-test to post-test for all comprehension levels, including overall, literal, inferential and evaluative comprehension.

## CHAPTER SIX

### STUDENTS' PARTICIPATION AND INTERACTION IN AOD

This chapter presents the results of content analysis of the experimental group discussion during the 12 AODs of the study. Findings are organised into two parts. The first part presents the results of quantitative analysis of students' participation in AOD that aimed to answer the third research question: how do students participate in AOD about a reading from a set text? Then the results of content analysis of students' interaction in AOD are reported to answer the fourth research question: how do students interact with others in AOD about a reading from a set text?

#### 6.1 Students' Participation in AOD

In order to examine students' participation in the AOD, the quantitative analyses of students' participation in online discussion are presented as participation rates.

Table 19 summarises the students' messages and themes during the 12 AODs. The 32 participants posted a total of 447 messages that included 516 themes. The average number of students' messages per online discussion was 37.25 ( $SD = 5.93$ ,  $N = 12$ ).

Table 19

*Total and Averages of Students' Messages and Themes during the 12 AODs*

Participants	Number of AODs	Messages			Themes		
		Total	M	SD	Total	M	SD
32 Students	12	447	37.25	5.93	516	43.00	7.39

The findings revealed that most of the students participated in each discussion. The average number of student contributors per discussion was 28 ( $SD = 2.43$ ,  $N = 12$ ). As shown in Figure 2, the number of students who participated in the 12 discussions ranged from 23 students (72% of the total 32 students) in the first discussion to 31 students (97%) in

discussions 10 and 12. These results indicate that the students' participation rate in each discussion was high. (More detailed results are shown in Appendix N.)

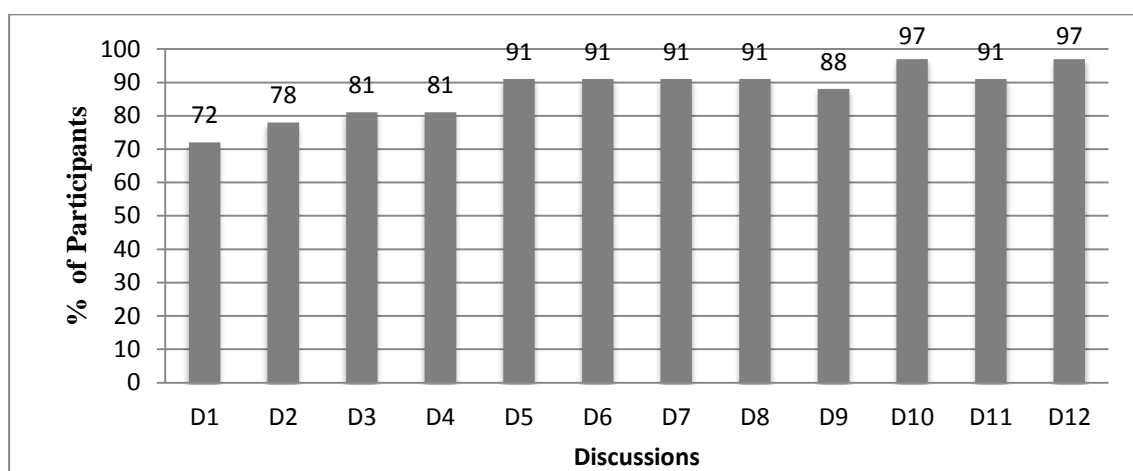


Figure 2. Proportions of students who participated during the 12 AODs.

The number of students' messages increased from the first discussion until the last discussion (Figure 3). However, the number of student posts was not steady over the whole period; for example, in discussions 7, 10 and 12 the number of posts reached the highest points, registering 42, 42 and 47 messages per discussion, respectively. Comparing the number of messages in the first discussion (one) with the last discussion (12) shows that the number of messages increased from 28 to 47 messages. Applying the Wilcoxon signed-ranked test indicates that this increase was significantly higher in discussion 12 ( $Mdn = 1.5$ ) than in discussion one ( $Mdn = 1$ ),  $z = -3.04$ ,  $p < 0.05$ .

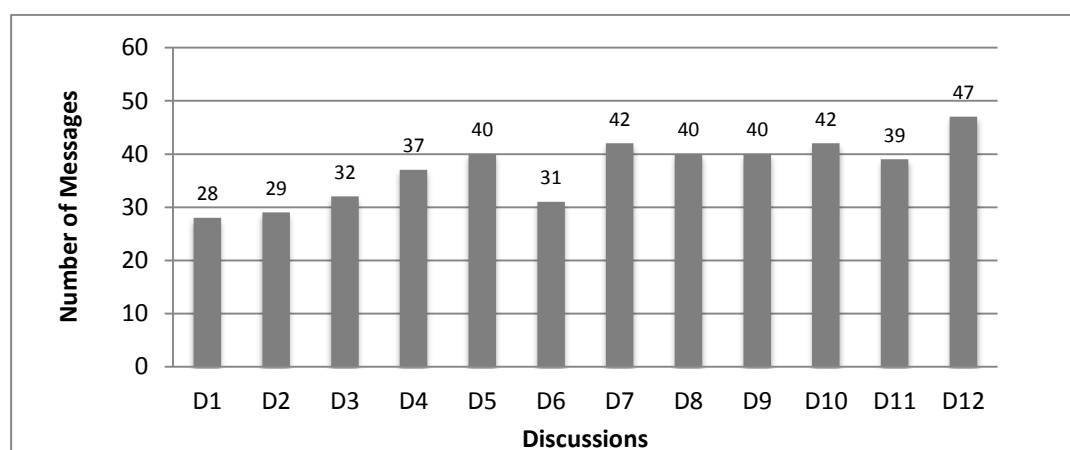


Figure 3. Number of students' messages per online discussion.

Participation rates were not equal among the students, with some students posting more messages than others in the online discussions. Figure 4 shows that during 12 online discussions, 10 students posted 10–12 messages, 18 students posted 13–16, and four students posted 17–20. These results indicate that, although all students participated in the discussions, some students were more active participants than others in terms of the number of posts (Appendix O). Students were allowed in per discussion to post only one or two messages answering teacher questions, responding and commenting on peers' posts no more than three times, and asking no more than two questions.

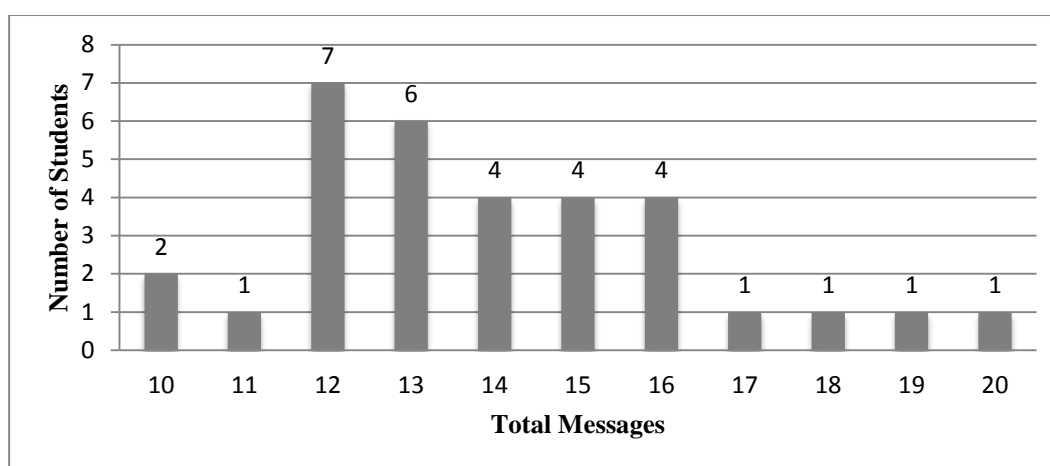


Figure 4. Total messages posted by each student during the 12 AODs.

### 6.1.1 Summary of students' participation in AOD

In summary, the purpose of this section was to answer the third question of this study: how do students participate in AOD about a reading from a set of text? The results showed that the number of students who participated in the 12 discussions was relatively high. The number of messages increased gradually over the first five discussions, and reached the highest point of participation in discussion 12. However, it must be pointed out that overall students' participation in the discussions was not uniform, as can be inferred from the number of messages posted by each participant.

## 6.2 Students' Interactions in AOD

This section presents the results of the content analysis of students' online discussions over the 12 AODs, focusing on interaction themes and types. This aims to answer the fourth research question: how do students interact in AOD about a reading from a set text? The discussion themes were analysed and reported in the following manner: (a) the focus of the students' discussions; then (b) a detailed analysis of the interaction themes that emerged during the students' online discussions.

### 6.2.1 Focus of students' online discussions

The majority of students' themes focused on the reading under discussion (Figure 5). In total, 32 students posted 516 themes during the 12 discussions. The average themes per discussion was 43 ( $SD = 7.39$ ,  $N = 12$ ). Themes that focused on the topic numbered 447 (87% of the total discussion), with an average of 37.25 on-topic themes per discussion ( $SD = 5.75$ ,  $N = 12$ ); off-topic (social cues) themes numbered 69 (13% of the total discussion), with an average of 5.75 off-topic themes per discussion ( $SD = 2.30$ ,  $N = 12$ ). These results suggest that in this study, students were mostly engaged in discussion of the topics.

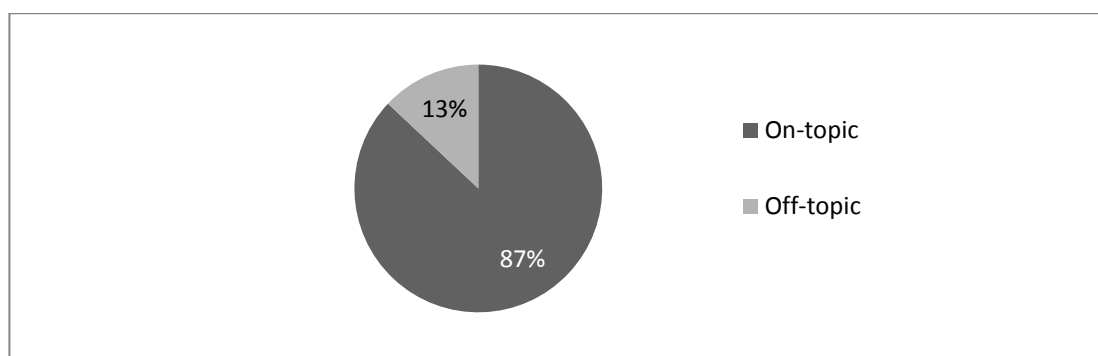


Figure 5. Proportions of on- and off-topic themes in students' messages during the 12 AODs.

### 6.2.2 Themes of students' interaction in AOD

Discussion themes were analysed to understand how students interact in online discussions about reading comprehension. Figure 6 shows the number and proportions of

theme types posted during the 12 discussions. The number and proportions of themes indicated that the most common themes were answering questions (248 themes, 48% of the total discussion), encouragement (48 themes, 9%), scaffolding comprehension strategies (46 themes, 9%) and support-seeking questions (40 themes, 8%). In contrast, the themes least applied by students were starting discussion questions (28 themes, 5%), agreement and disagreement (22 themes, 4%) and reflection (15 themes, 3%). Separate to these on-topic themes, there were 69 off-topic social cues themes (13% of the total discussion) (Appendix P).

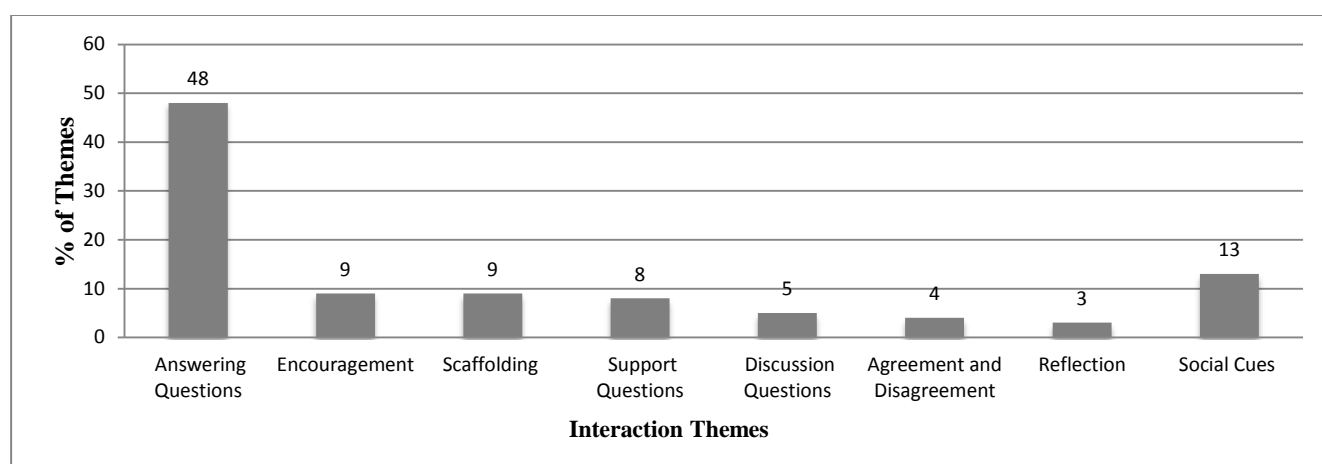


Figure 6. Proportions of interaction themes in students' messages during the 12 AODs.

#### 6.2.2.1 Students' answers to questions

Teachers posted weekly questions focusing on different comprehensions strategies. Students also posted their additional questions related to the topic during the established discussion periods. The most frequent theme in students' posts was answering questions, with 248 themes (48% of the total themes) and the average number of posts of this theme per discussion was 20.67 ( $SD = 4.52$ ,  $N = 12$ ). These results suggest that the majority of students' discussions concentrated on responding to the teachers' questions. This indicates that the teachers' questions provided focus for the discussion and students' responses (Appendix P).

### 6.2.2.1.1 Students' answers to literal questions

Teachers posted literal comprehension questions during discussions two, six and 11. The percentage of students who posted answers to these questions increased steadily over these discussions, with 66%, 78%, and 88% of the total students responding for discussions two, six and 11, respectively (Figure 7). However, the results of the Cochran's  $Q$  test indicate that there was no significant difference in the total number of students who posted answers to literal comprehension questions across the three discussions,  $Q(2) = 3.89$ ,  $p > 0.05$ . The number of students who provided accurate literal answers was 17 (81% of total literal answers) in discussion two and 25 (89% of total literal answers) in discussion 11 (Figure 7).

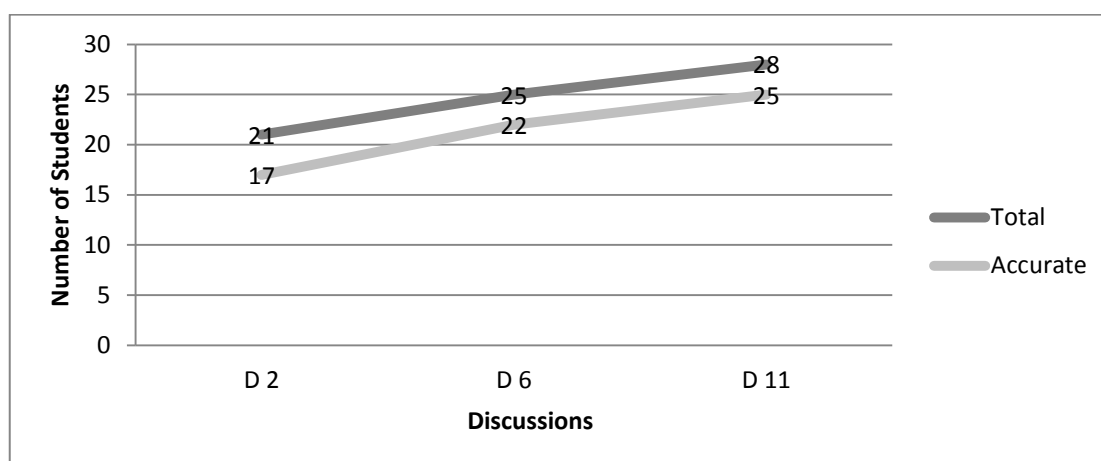


Figure 7. Number of students who posted answers to literal questions: total and accurate answers. *Note:* D2 refers to the number of AOD.

Findings revealed that students applied two literal comprehension strategies. The first strategy used was restating facts and details about main characters mentioned clearly in the text and story, which accounts for 42 themes (57% of the literal answers). The second literal strategy was identifying general information and facts mentioned clearly in the texts (*e.g.*, benefits of locations of Gulf countries); this strategy included 22 themes (30% of literal answers). It was also found that some students posted inaccurate literal information on 10 themes, which accounts for 13% of the students' answers (Figure 8). Inaccurate literal



answers refer to answers that do not belong to the text under discussion, or wrong answers. The following example shows how students restated some information about the main character in the passage:

*Teacher:* “According to the text: what are the main characteristics of Ebn-Taimiah?”

*S3:* “Ebn-Taimiah was brave, creative, and clever.” [**Literal information, identifying fact about main character: restating characteristics**]

*S1:* “Ebn-Taimiah was brave, read lots of books, spent lots of time reading, and he was strong.” [**Literal information, identifying fact about main character: restating characteristics**]

(*Student 3 [S3] and Student 1 [S1], Group 3 [G3], Discussion 2 [D2]*)

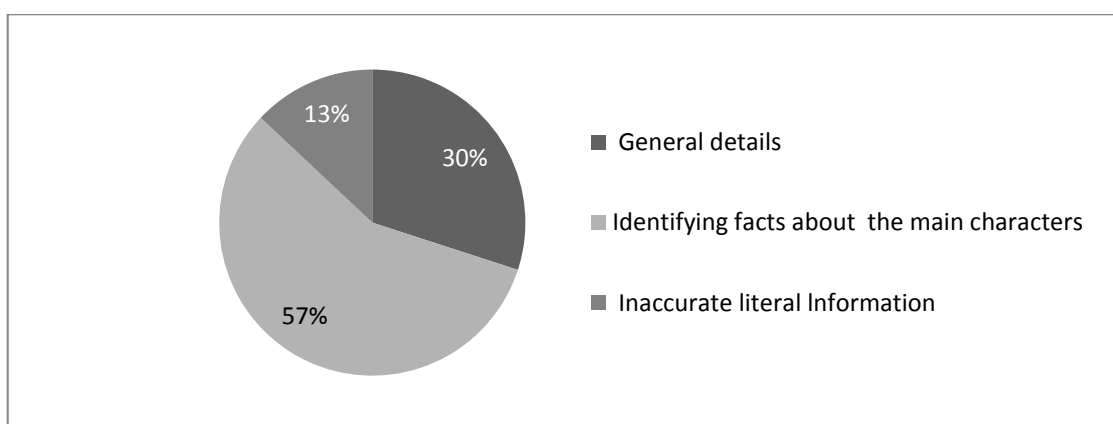


Figure 8. Proportions of comprehension strategies evoked in response to literal questions.

#### 6.2.2.1.2 Students' answers to inferential questions

Teachers posted six inferential questions during six discussions (discussions one, three, five, seven, eight and 10). The percentage of students who posted answers to the inferential questions increased over the six discussions, from 44% in discussion one to 78% of the total students in discussion 10 (Figure 9). The results of the Cochran's  $Q$  test indicated that there was a significant difference in the total number of students who posted answers to the inferential questions across the six discussions,  $Q(5) = 12.778$ ,  $p < 0.05$ . The McNemar's test was also conducted to compare the number of students who answered inferential

questions in discussion one versus 10, showing a significant difference ( $p < 0.05$ ). The percentage of students who applied accurate inferential strategies was 10 (71% of total students who posted inferential answers) in discussion one and 23 (92%) in discussion 10 (Figure 9).

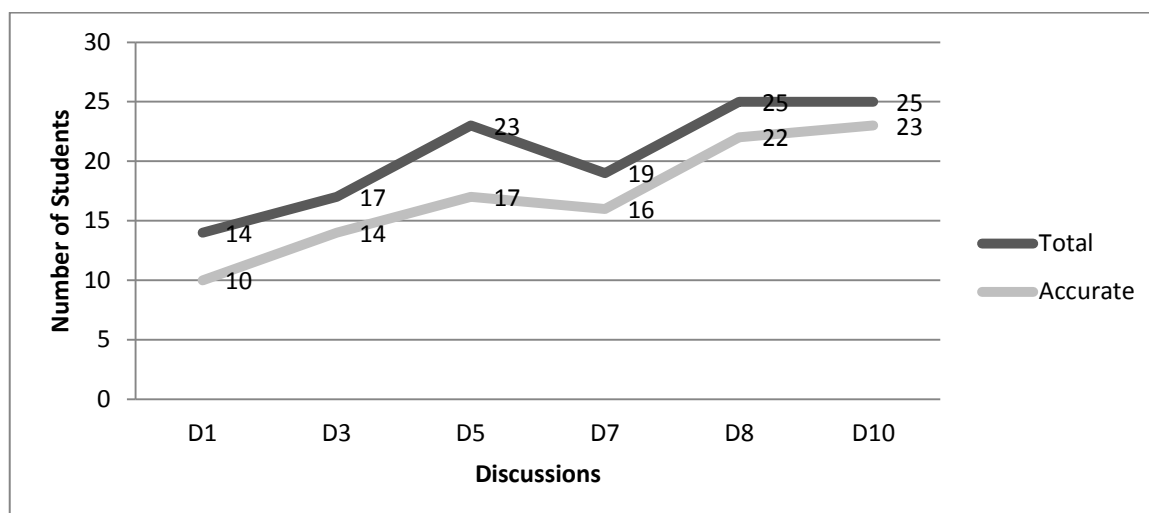


Figure 9. Number of students who posted answers to inferential questions: total and accurate answers.

The findings showed that students applied four inferential comprehension strategies when responding to teachers' inferential questions (Figure 10). Students applied various inferential strategies including inferring the main idea of the text (30 themes, 24% of the inferential answers), and drawing conclusions (27 themes, 22%). The following example shows how students draw conclusion and infer word meaning by making connections between text content and their life experiences:

"I benefited from this text that if I give some money to help people, I would be happy in my life." [**Drawing conclusion by making connection to life**] (S4, G1, D1)

"I understood from this text that, if I want to be a good person, I need to support and help other people." [**Drawing conclusion by making connection to life**] (S3, G5, D5)

"The word 'bright' means good and great, my example: I support my soccer team because it has a bright history." [**Inferring word meaning by connection to life**] (S7, G4, D8)

As shown in Figure 10, the proportion of answers providing literal information was 17% of the total answers reported in the six online discussions. However, some students did not distinguish between literal and inferential information in some discussions, particularly in the first discussion (D1). For example, “the main idea is that there are no two similar fingerprints” [**providing literal information while the teachers question focused on inferring the main idea**] (S5, G4, D3).

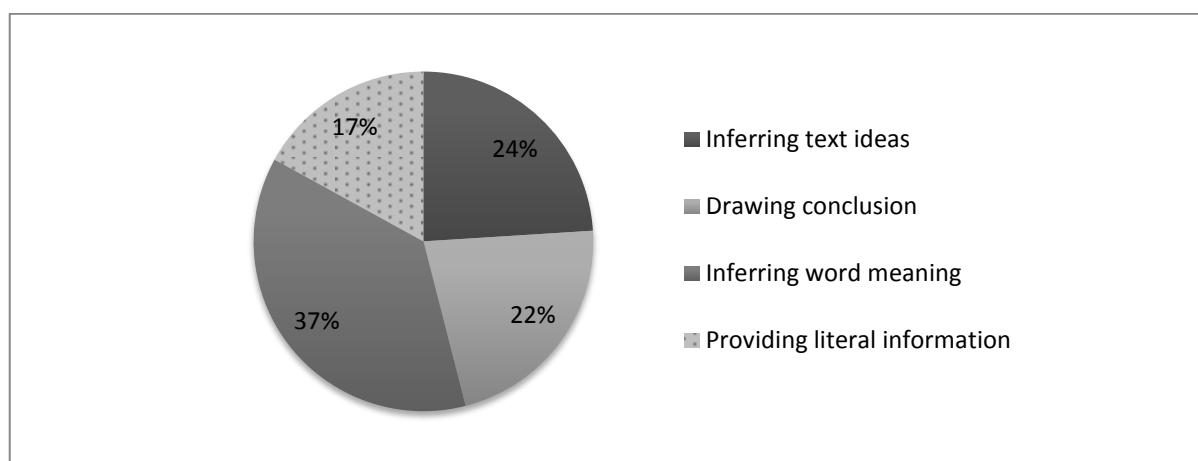
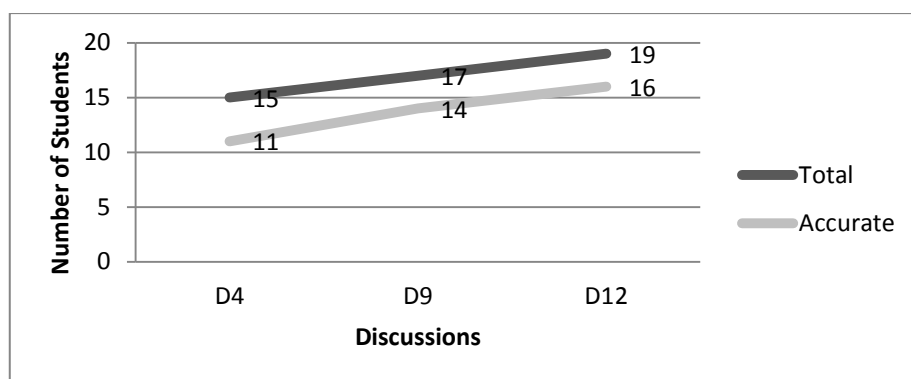


Figure 10. Proportions of comprehension strategies evoked in response to inferential questions.

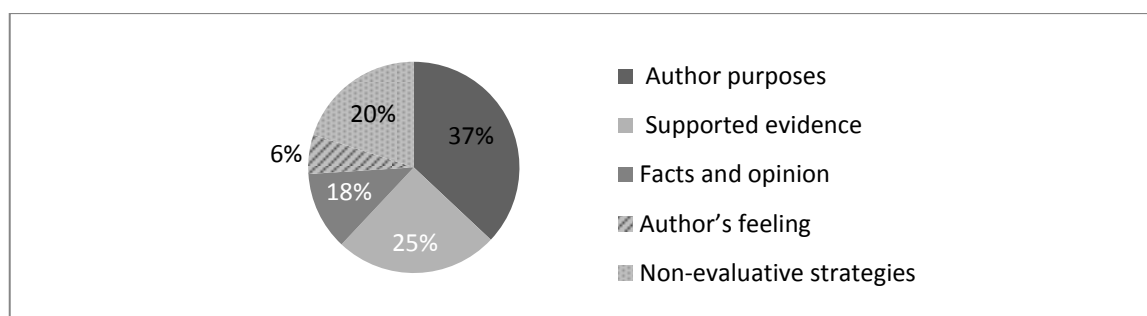
#### 6.2.2.1.3 Students' answers to evaluative questions

Teachers posted evaluative questions during three discussions (four, nine and 12). The percentage of students who answered evaluative questions increased from 47% of total students in discussion four to 59% in discussion 12 (Figure 11). Applying the Cochran's  $Q$  test indicated that there was no significant difference in the total number of students who posted evaluative answers across the three discussions,  $Q(2) = 0.800, p > 0.05$ . The number of students who posted correct answers was 11 (73% of students who posted evaluative answers) in discussion four, and 16 (84%) in discussions 12 (Figure 11).



*Figure 11.* Number of students who posted answers to evaluative questions: total and accurate answers.

As shown in Figure 12, the analysis of students' answers to evaluative questions indicates that students applied four evaluative strategies. The first and most applied evaluative strategy was identifying the purpose of the author of the text (19 themes, 37% of evaluative answers). For example, "I think the purpose of the author this week is to inform us about the fingerprint benefits" (*S2, G4, D4*). The second strategy adopted by students was to evaluate the evidence used by the authors to support their ideas (13 themes, 25%). For instance, "the author uses stories and some inventions that were made by Arabs" (*S4, G2, D9*). The third applied strategy focused on distinguishing between facts and opinions in the text (6 themes, 12%). For example, "I'm not sure but I think the author in this text wrote facts not opinions" (*S6, G2, D9*). The third applied strategy focused on identifying the author's feeling in the text (3 themes, 6%). It was also found that some students did not use evaluative strategies but rather provided literal or inferential answers (10 themes, 20%).



*Figure 12.* Proportions of comprehension strategies evoked in response to evaluative questions.

#### **6.2.2.2 Encouragement**

Students supported and encouraged each other in the online discussion, posting 48 encouragement themes (representing 9% of the total themes in the discussion). As shown in Figure 13, to encourage other participants in the online discussion students: (a) thanked other students for their messages and participation (27 themes, 56% of total encouragement themes), *e.g.*, “Thank you for your message” (*S4, G3, D2*) and “Thank you, my friends, for your participation in this discussion” (*S6, G2, D9*); (b) thanked each other for their answers (14 themes, 29%), *e.g.*, “Thank you for your answer” (*S1, G5, D7*); and (c) acknowledged others’ answers by mentioning their names and explaining how their contribution helped others’ to understand the text (7 themes, 15%), for example, “I think this answer is a good answer for the question. It helped me to understand how to answer this question” (*S5, G1, D2*).

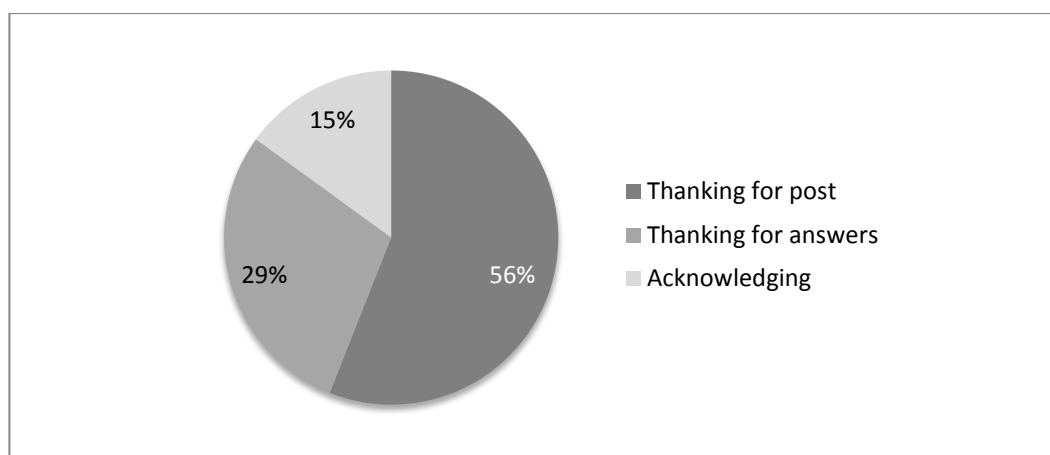


Figure 13. Proportions of encouragement methods used by students during the 12 AODs.

The discussions that focused on evaluative and inferential strategies attracted more encouragement per discussion than the literal comprehension posts (Table 20). This indicates most encouragement themes were posted in response to these two comprehensions levels. The Friedman test was conducted to compare between the average number of encouragement themes among the three comprehension levels, indicating there was a significant difference in the average number of encouragement themes across the three comprehension strategies,  $\chi^2(2) = 7.15, p < 0.05$ . The analysis of encouragement themes revealed some indicators of students' interaction in which students responded to each other and thanked others for their posts and participation. Moreover, students supported each other's participation and contribution about the text, specifically when making posts at the evaluative and inferential comprehension levels.

Table 20

*Totals and Averages for Encouragement Themes Posted by Students During the 12 AODs*

Comprehension strategies	Number of students*	Number of discussions	Total themes	Average themes per discussion	SD
Literal	8	3	8	2.67	0.58
Inferential	24	6	24	4.00	1.26
Evaluative	16	3	16	5.33	1.53
Total /Average	32	12	48	4.00	1.48

\* Note. number of students who posted encouragement themes in each level.

### 6.2.2.3 *Scaffolding comprehension strategies*

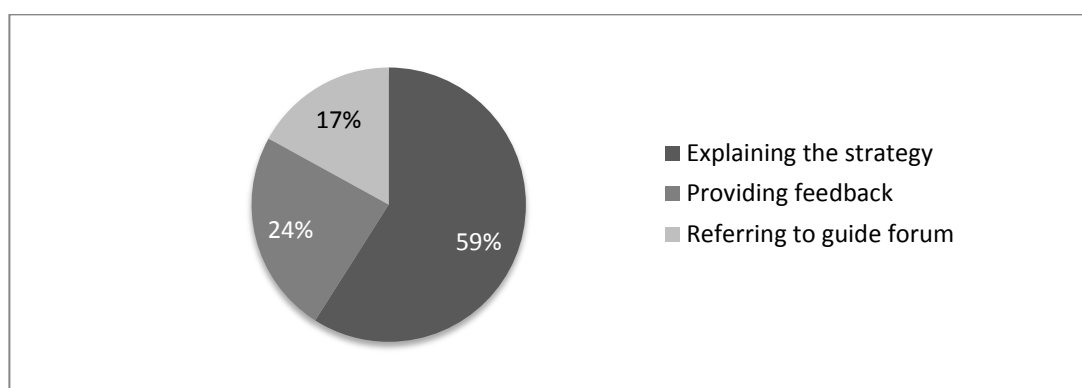
Analysis of students' discussion about reading revealed that some students supported other peers' learning and comprehension. Forty-six themes (9% of students' themes) were categorised as providing support to peers in their comprehension of the text. The analysis of these scaffolding comprehension themes illustrated that students applied three methods (Figure 14 and Appendix R).

The first method was (a) supporting peers by providing an explanation of the comprehension strategies (27 themes, 59% of the total of scaffolding strategies themes). For example, "I think the term inform refers to giving us more information about the text" [**explanation of purpose of the author: inform**] (*S6, G4, D12*). Some students also explained how they found the answers from the text. For example, "I read the text several times, the title and the first paragraph [**explanation of how the student found the answer**], and I think the important idea of the text is that fingerprints have many advantages in our life" (*S5, G2, D3*).

The second method for scaffolding comprehension was (b) providing feedback about peers' answers (11 themes, 24% of scaffolding themes). Students posted feedback on their peers' answers. One example of giving feedback was assessing others' answers: "I think your answer is correct" (*S1, G3, D4*). Another example of feedback was distinguishing between literal and inferential comprehension: "Your answer is not an inference because it is stated directly in the text as it was explained by the teacher in the guide forum" (*S2, G5, D5*).

The third method of providing scaffolding was (c) referring peers to the students' forum guide (8 themes, 17% of scaffolding themes). In this method, students supported each other by making reference to the information in the students' forum guide, for example, "I found the explanation on making inference in the students' forum guide helpful; it helped me to answer the questions" (*S7, G4, D5*).

These findings suggested that some students scaffolded their peers' knowledge and understanding of the reading comprehension strategies. Peers' scaffolding provided students with the opportunity of sharing knowledge and information about the comprehension strategies used in this online forum. Another finding was that some students referred to the student guide forum in which teachers provided explanation, modelling and examples, which indicates that students relied on teachers' instructions on how to learn and apply the comprehension strategies.



*Figure 14.* Proportions of scaffolding comprehension strategies used by students during the 12 AODs.

Questions that called for evaluative or inferential comprehension received more scaffolding than did literal comprehension (Table 21). The average number of scaffolding comprehension themes per discussion were evaluative ( $M = 5.33$ ,  $SD = 2.08$ ,  $n = 3$ ), inferential ( $M = 4.17$ ,  $SD = 1.94$ ,  $n = 6$ ) and literal ( $M = 1.67$ ,  $SD = 0.58$ ,  $n = 3$ ). Applying the Friedman test indicated that there was a significant difference between the average number of scaffolding themes across the three comprehension levels,  $\chi^2(2) = 10.519$ ,  $p < 0.05$ . These results suggest that students interacted and scaffolded each other in discussions that focused on evaluative and inferential strategies more than on literal strategies.



Table 21

*Totals and Averages of Scaffolding Comprehension Themes Posted by Students During the 12 AODs*

<b>Comprehension strategies</b>	<b>Number of students</b>	<b>Number of discussions</b>	<b>Total themes</b>	<b>Average themes per discussion</b>	<b>SD</b>
Literal	5	3	5	1.67	0.58
Inferential	22	6	25	4.17	1.94
Evaluative	14	3	16	5.33	2.08
Total/Average	32	12	46	3.83	2.12

#### **6.2.2.4 Support-seeking questions**

Students posted some questions asking for support and help from their peers. The findings show that 40 themes (8% of the total discussions) were coded as support-seeking questions. Students asked for support in different ways (Figure 15).

First, asking others to clarify and explain comprehension strategies (17 themes, 43% of support-seeking question themes). The following example shows how a student seeks for support on understanding evaluative questions: “how do you know the author purpose is to inform us about the fingerprints?” (*S4, G2, D4*). In this example, the student seeks clarification on how to identify the author purpose from the text.

Second, asking others in the group to provide examples of answers (12 themes, 30%). For example, “I do not know how to find sub-ideas, can anyone give me one example about the sub-ideas in the text?” (*S6, G5, D7*).

Third, asking for support with technical problems, such as participation limits or Internet access (11 themes, 27%). For example, “hi everyone; can anyone tell me the number of messages that we should post this week?” (*S3, G1, D2*).

These results indicate that being involved in online discussion gave students a chance to seek support from their peers. This is indicative that students did not interact with the

teachers only, but also they interacted with their peers asking for support, particularly on the reading comprehension strategies.

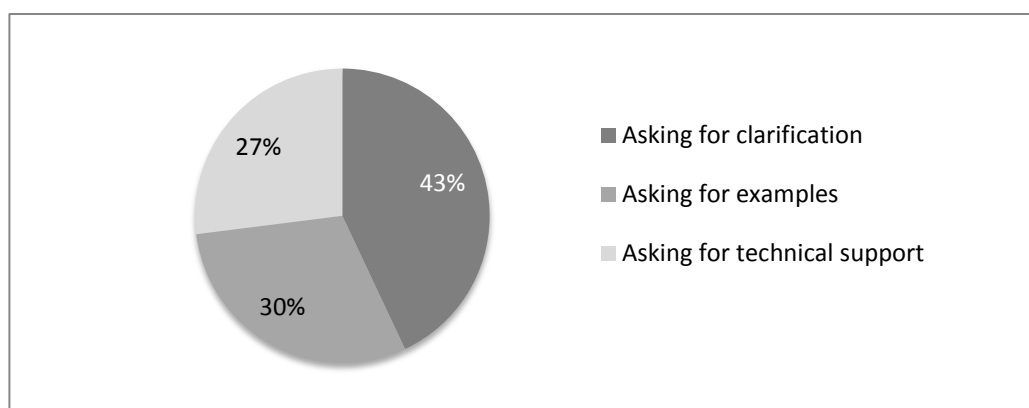


Figure 15. Proportions of support-seeking question methods used by students during the 12 AODs.

As shown in Table 22, the average number of support-seeking questions in the discussion that focused on evaluative strategies was 5.33 themes per discussion ( $SD = 1.52$ ,  $n = 3$ ). The average number of support-seeking questions in inferential discussion was 3.33 themes per discussion ( $SD = 1.37$ ,  $n = 6$ ), and literal discussion was 1.33 themes per discussion ( $SD = 0.58$ ,  $n = 3$ ). The Friedman test results indicated that there was a significant difference in the average number of support-seeking question themes across the three comprehension levels,  $\chi^2(2) = 12.788$ ,  $p < 0.05$ . These findings indicated that students asked for support with evaluative and inferential strategies more than literal. This suggested that inferential and evaluative levels were more challenging to students, consequently, needing more assistance.

Table 22

*Totals and Averages of Support-seeking Question Themes Posted by Students During the 12 AODs*

<b>Comprehension strategies</b>	<b>Number of students</b>	<b>Number of discussions</b>	<b>Total themes</b>	<b>Average themes per discussion</b>	<b><i>SD</i></b>
Literal	4	3	4	1.33	0.58
Inferential	20	6	20	3.33	1.37
Evaluative	16	3	16	5.33	1.52
Total/Average	32	12	40	3.33	1.87

#### **6.2.2.5 Starting discussion questions**

Students posted 28 themes (5% of the students' themes), which were coded as "starting discussion questions". In this type of discussion, students asked questions about the text that could be related to their peers' experiences so as to start a new discussion. For example, one student posted the question, "has anyone visited a Gulf country [**asking about personal experience**]? If so, how was it?" (*S6, G1, D7*). Another student asked, "hi everyone, I suggest that if anyone in the group is a happy person or not, could he tell us why and why not?" (*S4, G4, D1*). This type of question aims to start a new discussion, instead of requesting help, support or clarification. Findings revealed that 19 questions (68% of the total themes in this type of question) triggered follow-up discussions from peers. Students also displayed initiative in starting discussions by posting some questions during some discussions. This behaviour of leading discussion, however, was not frequent during the 12 discussions. Although these themes were not as common, they did indicate that some students were active in starting new discussions. This type of participation enabled students to share their experiences, exchange ideas, and relate the text to their own lives.

The average number of starting discussion question themes posted in evaluative discussions was 3.67 themes per discussion ( $SD = 1.53$ ,  $n = 3$ ); the average in inferential discussions was 2.17 themes per discussion ( $SD = 0.41$ ,  $n = 6$ ); and in literal discussions was

1.33 themes per discussion ( $SD = 0.58$ ,  $n = 3$ ), as shown in Table 23. This indicated that students posted discussion questions that started a new conversation more in the evaluative and inferential discussions than in the literal discussions. However, the Friedman test results indicated that there was no significant difference in the average questions themes across the three comprehension levels,  $\chi^2(2) = 3.028$ ,  $p > 0.05$ .

Table 23

*Totals and Averages of Starting Discussion Question Themes Posted by Students During the 12 AODs*

<b>Comprehension strategies</b>	<b>Number of students</b>	<b>Number of discussion</b>	<b>Total themes</b>	<b>Average themes per discussion</b>	<b>SD</b>
Literal	4	3	4	1.33	0.58
Inferential	13	6	13	2.17	0.41
Evaluative	11	3	11	3.67	1.53
Total/Average	32	12	28	2.33	1.15

#### 6.2.2.6 Agreement and disagreement

Students' agreement and disagreement with their peers registered only 22 themes (4% of the total discussion). Students' posts included: (a) agreement with peers' answers (11 themes, 50% of agreement/disagreement themes), *e.g.*, "I agree with you, this is the main idea of the text" (*S1, G4, D3*); (b) agreement about the difficulty of the teachers' questions (8 themes, 36%), for example, "I also think this week, the question is difficult, I agree" (*S6, G2, D4*); and (c) disagreement with peers' answers (3 themes, 14%), for example, "I disagree with you, your answer is incorrect" (*S4, G4, D9*). In these online discussions, some students' interaction was manifested through agreeing and supporting their peers. However, it was noticeable that students tended not to disagree or challenge each other.

The averages for agreement and disagreement themes, which focused on the three comprehension strategies were literal ( $M = 1$ ,  $SD = 1$ ,  $n = 3$ ), inferential ( $M = 1.83$ ,  $SD = 0.75$ ,  $n = 6$ ) and evaluative ( $M = 2.67$ ,  $SD = 1.53$ ,  $n = 3$ ) (Table 24). The Friedman test indicated

that there was no significant difference in the average number of agreement and disagreement themes across the three comprehension levels,  $\chi^2(2) = 2.800, p > 0.05$ . Therefore the level of agreement and disagreement was not significantly affected by the comprehension strategies.

Table 24

*Totals and Averages of Agreement and Disagreement Themes Posted by Students During the 12 AODs*

<b>Comprehension strategies</b>	<b>Number of students</b>	<b>Number of discussions</b>	<b>Total themes</b>	<b>Average themes per discussion</b>	<b>SD</b>
Literal	3	3	3	1	1.00
Inferential	11	6	11	1.83	0.75
Evaluative	8	3	8	2.67	1.53
Total/Average	32	12	22	1.83	1.11

#### 6.2.2.7 Reflection

There were 15 reflection themes (3% of the total discussion). Students' reflection focused mainly on their learning and understanding including: (a) reflection on their understanding of strategies (7 themes, 47% of reflection themes), for example, "this week, the discussion helped me understand how to distinguish between literal information and drawing an inference" (S3, G5, D5); (b) reflection on the usefulness of the Internet for learning (5 themes, 33%), for example, "this experience helped me to use the Internet for studying, not only for playing games and chatting" (S6, G3, D8); and (c) students' reflection on their learning styles (3 themes, 20%), *e.g.*, "this group discussion helped me to learn how to discuss in groups and work with friends; it is a very useful method, I think" (S1, G5, D3). Table 25 shows that the average number of reflection themes ranged from 1.00 in inferential discussions to 1.67 in evaluative discussions. Students did not post reflection themes frequently; nevertheless, their posts described how the discussion and activities about the text supported their understanding.

Table 25

*Totals and Averages of Reflection Themes Posted by Students During the 12 AODs*

<b>Comprehension strategies</b>	<b>Number of students</b>	<b>Number of discussion</b>	<b>Total of themes</b>	<b>Average themes per discussion</b>	<b>SD</b>
Literal	4	3	4	1.33	0.58
Inferential	6	6	6	1.00	0.63
Evaluative	5	3	5	1.67	1.15
Total/Average	32	12	15	1.25	0.75

#### 6.2.2.8 Social cues

Students posted 69 themes (13% of all themes) on social cues unrelated to the reading topics. Analysis of social cues showed three categories: (a) greeting peers in the discussion (32 themes, 46% of social cue themes), for example, “Hello everyone” (*S2, G5, D2*); (b) expressing feelings (26 themes, 38%), *e.g.*, “I enjoyed playing soccer this week, it was interesting” (*S4, G2, D2*); and (c) personal life and interests (11 themes, 16%). For example, “I’m going to watch the match this week” (*S7, G4, D11*).

Students manifested their feelings in various ways, including: (a) feelings of discussion enjoyment (6 themes, 9% of social cues themes), *e.g.*, “It was interesting to participate in the discussion forum, I enjoyed it” (*S5, G1, D6*); (b) feelings of confusion (12 themes, 17%), for example, “I’m confused about the test this week” (*S7, G4, D7*); and (c) feelings about personal events (8 themes, 12%), for example, “I’m happy this week, I will buy a new computer” (*S2, G3, D5*).

Most social cue themes were posted in discussion weeks that focused on evaluative and inferential questions. The average of social cue themes on evaluative discussions was 7.67 per discussion ( $SD = 2.08$ ,  $n = 3$ ), on inferential discussions was 6.00 themes ( $SD = 1.79$ ,  $n = 6$ ), while on literal discussions was 3.33 themes ( $SD = 1.53$ ,  $n = 3$ ) (Table 26). The Friedman test indicated that significant differences existed in the average of the total number of social cue themes across the three comprehension levels,  $\chi^2(2) = 10.89$ ,  $p < 0.05$ . The

results also indicated that students' social interaction was higher during the evaluative and inferential comprehension discussions than the literal.

Table 26

*Totals and Averages of Social Cue Themes Posted by Students During the 12 AODs*

<b>Comprehension strategies</b>	<b>Number of students</b>	<b>Number of discussion</b>	<b>Total themes</b>	<b>Average themes per discussion</b>	<b>SD</b>
Literal	10	3	10	3.33	1.53
Inferential	30	6	36	6.00	1.79
Evaluative	22	3	23	7.67	2.08
Total/Average	32	12	69	5.75	2.30

### 6.2.3 Summary of students' participation and interaction in AOD

This part of the content analysis of the students' discussion themes aimed to answer the third and fourth questions of the study: how do students participate in AOD about a reading from a set text? And, how do students interact with others in AOD about a reading from a set text? The results suggest that the majority of students' discussions concentrated on responding to the teacher questions. However, the findings also revealed the following features of students' participation and interaction in AOD:

- a) Students' responses and discussion focused mostly on reading tasks and teachers' questions. Most students' contributions and posts concentrated on reading comprehension strategies.
- b) Students' application of comprehension strategies increased as the discussion progressed, particularly, the application of inferential comprehension strategies.
- c) Online discussion provided a supportive environment in which some students encouraged and thanked their peers for participating and contributing to the discussion, explained the comprehension strategies and provided feedback to peers' answers.

- d) In online discussion, students scaffolded and supported their peers' understanding of reading comprehension strategies.
- e) Different forms of student interaction with their peers about the text and knowledge were observed, including asking others for support, scaffolding others' understanding, agreement, and sharing experiences.
- f) Some students provided support to their peers in the discussion in various ways, including guiding their peers and supporting their comprehension, as well as starting new discussions.
- g) Students were involved in some off-topic social discussion, but overall much of students' interaction was on task.



## CHAPTER SEVEN

### TEACHER INVOLVEMENT AND FACILITATION OF STUDENTS' AOD

This chapter presents the findings of a content analysis of teachers' involvement in the 12 AODs, to answer the fifth research question: how do teachers facilitate students' comprehension during AOD about a reading from a set text? The teachers' discussion themes were analysed based on adapted categories of teaching presence in the Anderson, Rourke, Garrison and Archer (2001) coding scheme. These categories include: (a) teachers' design and organisation; (b) teachers' discourse facilitation; and (c) direct teaching instruction. First, to provide an overview of the findings, a summary of teachers' messages and themes are presented. This is followed by a more detailed description of the findings in each of the teaching presence categories defined above.

#### 7.1 Overall Results of Teachers' Participation in AOD

Figure 16 presents the percentage of teacher themes categories that emerged during the 12 discussions. The two teachers posted 72 messages, averaging 6 messages per discussion ( $SD = 0.60$ ,  $N = 12$ ). These messages included 129 themes with an average of 10.75 themes per discussion ( $SD = 1.91$ ,  $N = 12$ ). The teachers' posts and involvement were not consistent across the 12 discussions, ranging from eight themes in discussions two and six to 13 in discussions three, seven and 10 (Figure 16). The overall results suggested that the teachers participated actively in the online discussion.

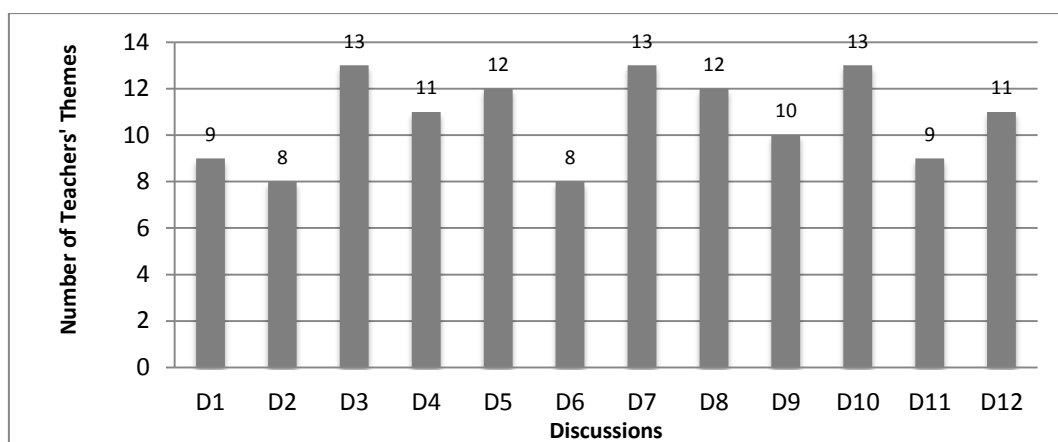


Figure 16. Total number of teachers' themes during the 12 AODs.

These themes were further analysed and divided into three main teaching presence categories as identified by the Anderson et al. (2001). As shown in Figure 17, most teachers' posts fell within the category of direct instruction (56 themes, or 43% of all teachers' themes). Teachers posted 46 discourse facilitation themes (36%) and 27 design and organisation themes (21%). These findings suggested that the teachers focused on supporting students' reading comprehension by giving direct instruction on how to apply comprehension strategies. Additionally, teachers facilitated students' discussion by encouraging their participation. However, it is evident that the teachers did not provide the same level of attention and posts to the design and organisation aspects across all 12 discussions. (More details provided in Appendix S.)

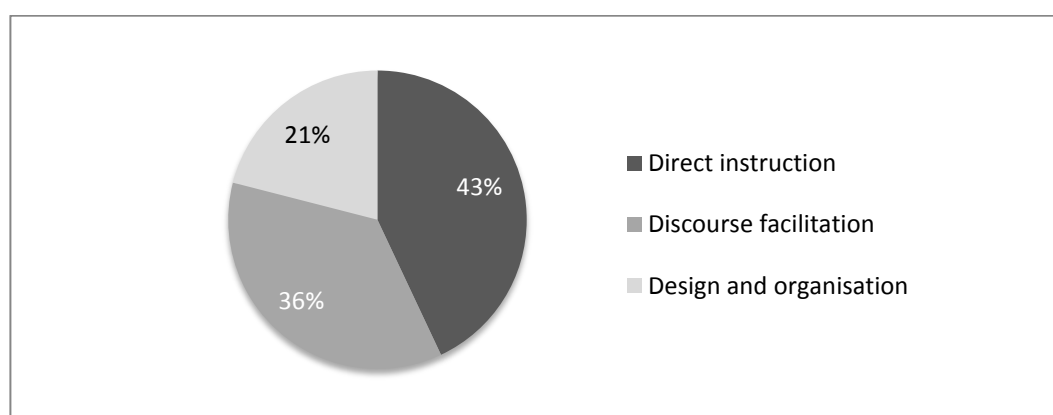


Figure 17. Proportions of teaching presence categories posted by teachers during the 12 AODs.

The average number of total teachers' themes posted during literal discussions was 8.33 per discussion ( $SD = 0.58$ ,  $n = 3$ ), in inferential discussions was 12 per discussion ( $SD = 1.55$ ,  $n = 6$ ), and in evaluative discussions was 10.67 per discussion ( $SD = 0.58$ ,  $n = 3$ ). That is, the average number of teachers' themes was highest in inferential discussions, and higher in evaluative discussions than in literal discussions, indicating that teachers posted and provided more support to discussions that focused on inferential and evaluative comprehension, more so than literal.

## 7.2 Teachers' Design and Organisation Themes

Teachers posted 27 design themes, which equated to 21% of the total teachers' themes. The most frequently used themes in the design and organisation category were: (a) designing methods, *i.e.*, setting students tasks and group structure, with 13 themes (48% of design themes); (b) setting curriculum goals, aims, materials and topics, which amounted to 12 themes (44%); and least frequently, (c) establishing time parameters, with 2 themes (7%) (Figure 18, Appendix T).

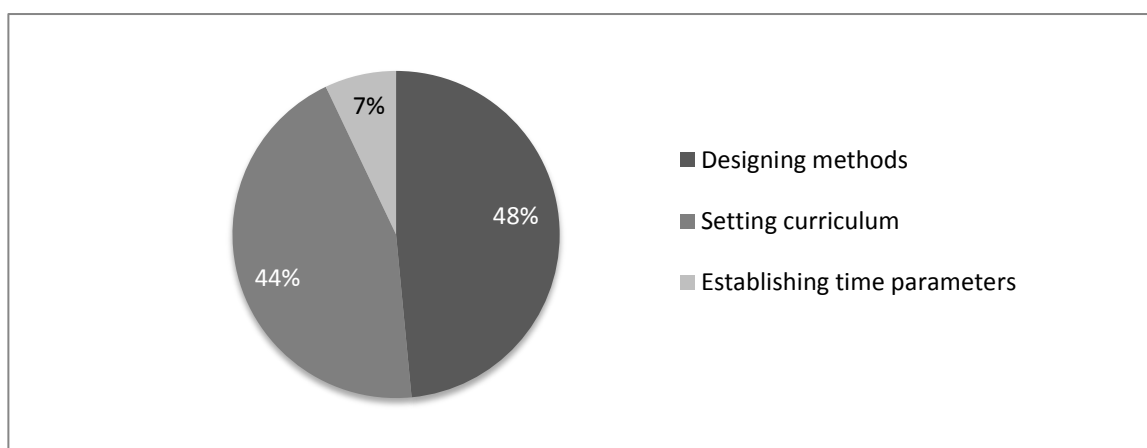


Figure 18. Proportions of design and organisation themes during the 12 AODs.

The most frequently used themes within the design and organisation category were design methods and setting curriculum. The teachers posted one theme every discussion that focused specifically on designing methods, identifying students' tasks, roles and their group

structure. For example, a teacher posted the following statement in discussion one: “This is the first discussion. Your task in this discussion is to read the text, answer the lesson questions, read others’ posts, and respond to these messages. **[Identifying students’ tasks]** Remember that you are only allowed to participate in your group’s forum” **[group structure]** (*T1, D1, Student Guide Forum [SGF]*). In this example, the teacher explained to the students the tasks and group structure. However, most of these tasks were not explained in detail, in terms of the content of their responses, that is students were not given detailed instructions, information or practical examples on how to comment and respond to others’ messages.

The second category used by the teachers was setting the curriculum for the reading activities. The teachers’ statements focused on identifying the topic, explaining the objectives of the reading activity and identifying the materials that students must use in the exercise. For example, one of the teachers posted, “This lesson, we will focus on happiness **[identifying the topic of the reading]**; our goals are to draw conclusions from this text and make inferences” **[identifying the instructional goal of the activity]** (*T1, D1, SGF*). An example of one of the few design and organisation themes posted by teachers that focused on time parameters, was, “You have three days for participation” **[time parameters]** (*T2, D3, SGF*).

Figure 19 shows the total number of design and organisation themes during the 12 discussions. The average number of design themes per discussion was 2.25 ( $SD = 0.62$ ,  $N = 12$ ). The average number of teachers’ design themes was similar during the 12 discussions across the three comprehension levels: in literal discussions it was 2.00 ( $SD = 0.00$ ,  $n = 3$ ), in inferential discussions 2.33 ( $SD = 0.82$ ,  $n = 3$ ), and in evaluative discussions 2.33 ( $SD = 0.58$ ,  $n = 3$ ). These results indicate that the teachers’ support in design and organisation aspects was almost consistent across the three comprehension levels, and across the 12 discussions, with slightly more organisational support in discussions three and four.

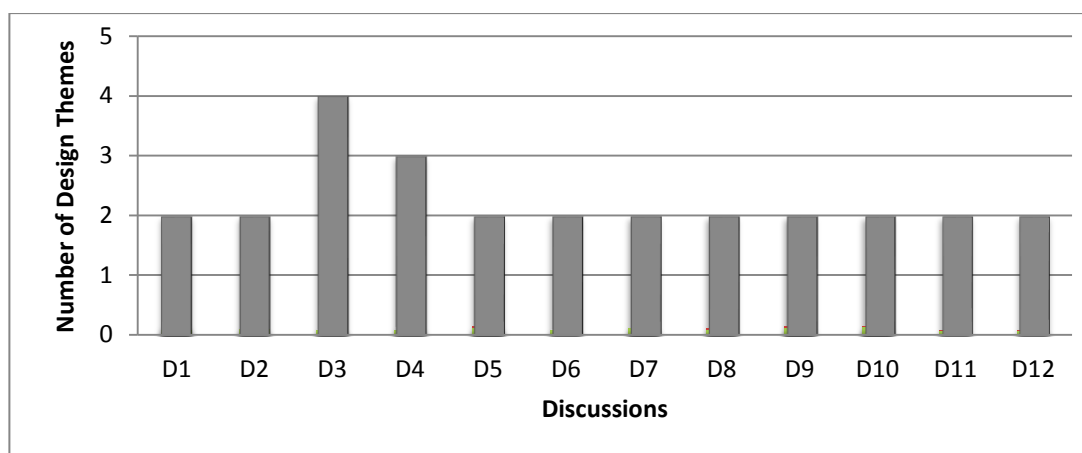


Figure 19. Total number of teacher design and organisation themes during the 12 AODs.

These design category results suggested that teachers provided some support in terms of explaining the tasks, focus of activities and provided brief statements on how students should participate and discuss (*e.g.*, answer, read, comment and respond). However, it seemed the teachers' design themes were directed mainly at students answering the questions instead of providing guidance and details on how to engage in the online discussion with their peers.

### 7.3 Teachers' Discourse Facilitation of Students' Discussions

The analysis of the second category (discourse facilitation) revealed that two approaches were applied by the teachers: (a) encouraging and thanking students (38 themes, 83% of discourse themes); and (b) posting social cues to help students feel familiar and comfortable with participating in the online discussions (8 themes, 17%). This indicates that teachers supported and facilitated the discussion by encouraging students to participate and post their answers (Appendix U).

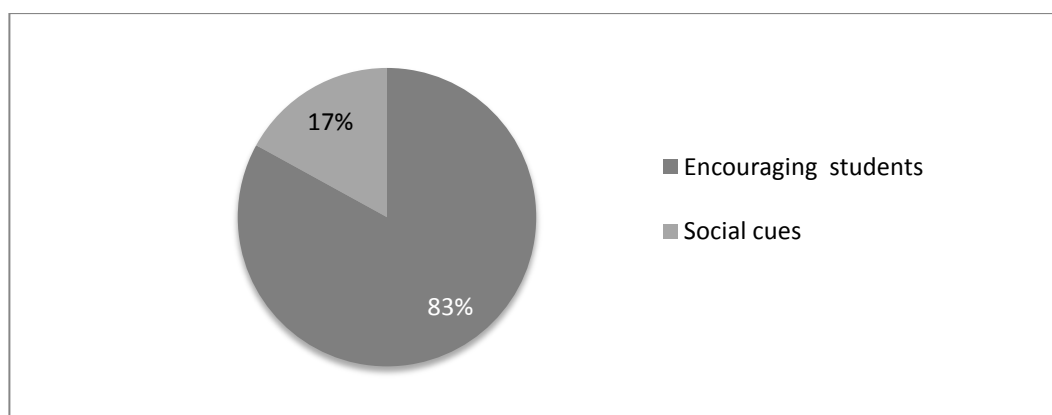


Figure 20. Proportions of teachers' discourse facilitation themes during the 12 AODs.

Within the category of encouraging the students' to participate in the discussions, four approaches emerging from the data:

- a) Thanking students for their participation (23 themes, 50% of discourse facilitation themes). For example, "Thank you for your post this week" (*T2, D3, G4*) and, "I would like to thank everyone who answered this week's questions" (*T1, D7, G5*).
- b) Encouraging students to read others' comments (7 themes, 15%), as in, "please read your peers' posts and comments" (*T1, D9, G1*).
- c) Encouraging students by thanking them for responding to others' comments (4 themes, 9%), for example, "good effort this week" (*T1, D9, G2*), "thank you for your comments and responses to your peers' posts" (*T2, D7, G3*).
- d) Acknowledging students' posts (4 themes, 9%), for example, "your answer was a good answer and contributed to the discussion" (*T1, D6, G5*), and "We can use [S5]'s answer as an example for answering this week's questions" (*T1, D5, G2*).

Figure 21 shows the total number of teachers' facilitation discourse themes over the 12 discussions. The average number of discourse themes per discussion was 3.83 ( $SD = 0.94$ ,  $N = 12$ ). Comparing the average of the teachers' discourse themes across the discussions focused on different levels of comprehensions revealed that the averages for the evaluative ( $M = 4.33$ ,  $SD = 0.58$ ,  $n = 3$ ) and inferential discussions ( $M = 4.17$ ,  $SD = 0.75$ ,  $n = 6$ ) were

more than for literal discussions ( $M = 2.67$ ,  $SD = 0.58$ ,  $n = 3$ ). These findings show that teachers encouraged discussion that focused on evaluative and inferential more than the literal comprehension levels.

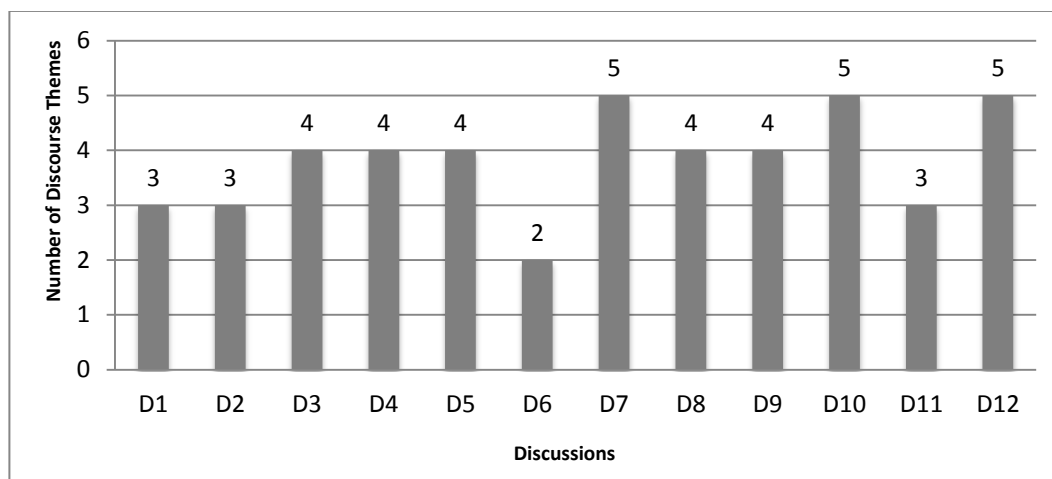


Figure 21. Number of teacher discourse facilitation themes during the 12 AODs.

In summary, in this discourse category, the teachers mainly focused on thanking students for their participation in the discussion and answers, while direct encouragement to interact and respond with others was limited.

#### 7.4 Teachers' Direct Instruction in AODs

Figure 22 presents the types of instruction themes that were applied by the teachers over the 12 discussions. The teachers applied different teaching instructions in order to support the students' comprehension including: (a) giving feedback and assessment on students' answers (17 themes, 30% of the total instruction category); (b) asking questions to start the discussion (15 themes, 27%); (c) modelling the comprehension strategy (9 themes, 16%); (d) diagnosing any misconceptions that students had about the comprehension strategies (5 themes, 9%); (e) providing explicit explanations of comprehension strategies (6 themes, 11%); and least frequently (f) referring to other sources (4 themes, and 7%) (Appendix V).

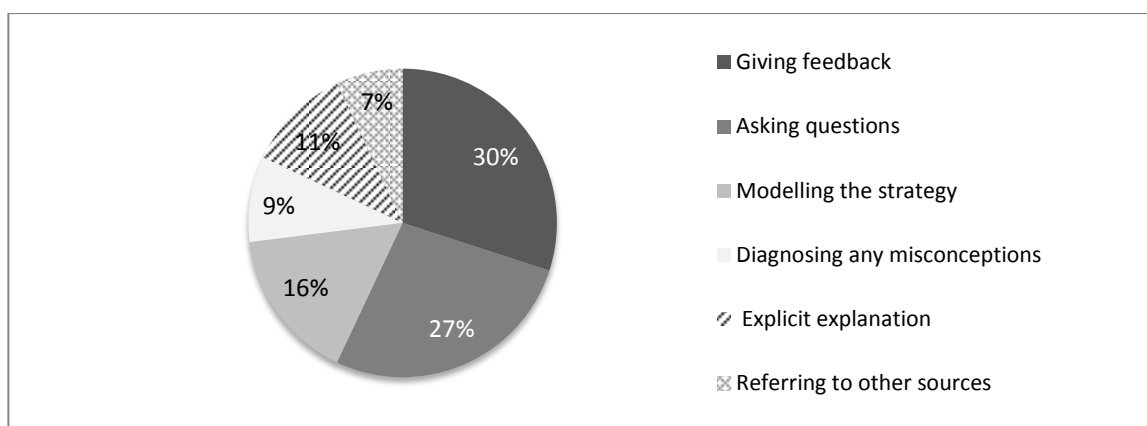


Figure 22. Proportions of teachers' direct instruction themes during the 12 AODs.

Figure 23 shows the number of direct instruction themes over the 12 discussions. The teacher posts that focused on instruction themes ranged from three in discussion two to six in discussions five, seven, eight and 10. The average number of teachers' instruction themes in inferential discussions ( $M = 5.50$ ,  $SD = 0.84$ ,  $n = 6$ ) was higher than in literal ( $M = 3.67$ ,  $SD = 0.58$ ,  $n = 3$ ) and evaluative discussions ( $M = 4$ ,  $SD = 0.00$ ,  $n = 3$ ). These results indicated that teachers supported students' understanding of inferential comprehension strategies more than evaluative and literal comprehension strategies.

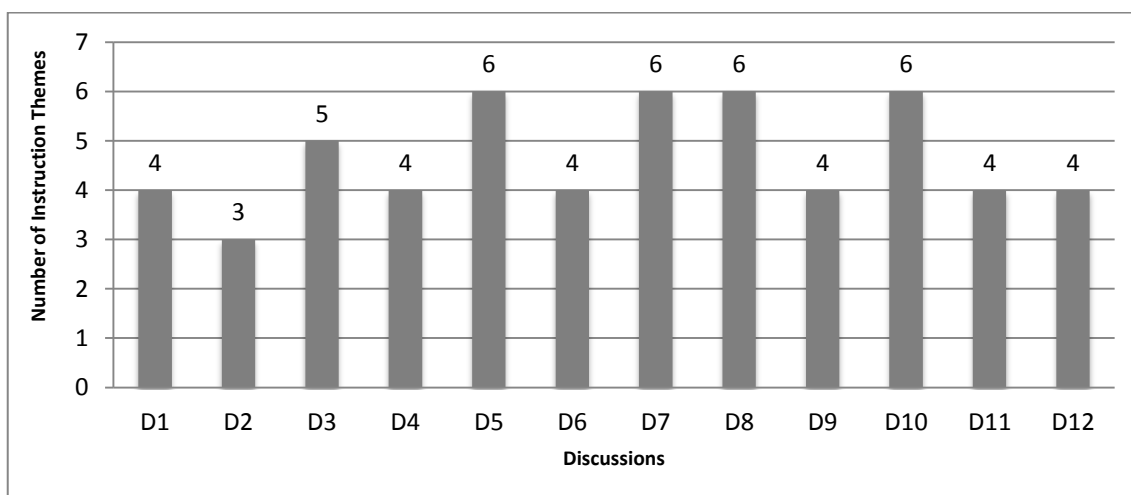


Figure 23. Number of teachers' direct instruction themes during the 12 AODs.



### 7.4.1 Giving feedback

Giving feedback was the teachers' most frequently used theme, with 30% of the total instruction themes. This strategy involved four types of feedback: (a) feedback on students' answers (four themes, 24% of total feedback themes), for example, "Your answer is incorrect... you need to think about your answer again, read the text, and post again" (*T1, D5, G7*); (b) on a whole group's answers for the whole week (six themes, 35%), for example, "The group's answers this week were very good and most of them were correct" (*T1, D9, G2*); (c) on students' participation (four themes, 24%), as depicted in the statement, "I noticed this week that not all students participated and sent messages" (*T2, D1, G3*); and (d) on students' interaction (three themes, 18%), as exemplified in, "You need to focus on writing comments and responding to others" (*T2, D9, G4*).

Interestingly, the findings revealed that teachers posted most of their feedback at the end of the discussion: 4 feedback themes (24% of total feedback themes) during the discussion versus 13 (76%) at the end of every discussion. These results indicated that most of the feedback focused on the students' answers and the number of posts and only a few instances emphasised students' interactions with their peers.

In spite of using feedback as an instructional strategy, this generally consisted of brief statements rather than providing explanatory and detailed comments. Only five of the 17 instructional themes contained detailed or explanatory feedback. An example of short feedback was "good answers and participation" (*T2, D10, G3*). The following discussion shows how Teacher 1 provided extended feedback to students:

*Teacher:* "What is the author's main purpose for writing the text: inform, persuade, entertain or warn? What evidence does the author use to support these ideas?."

*S1:* "I think the answer is to inform, and the evidence is the listing of some Arab inventions."

*S2:* "Same answer—to inform us—and the author used evidence."

*S3:* "What is the difference between inform and persuade?"

*Teacher:* “Thank you for your answers, the differences between them are written in the students’ forum guide with examples and explanations. These three answers are good, but you need to explain your answer more, for example, to inform us about what? Give examples about the evidence you chose.” **[Explanatory feedback]**

*(T1, D9, G2)*

The previous examples show how teachers provided explanatory feedback to motivate students to elaborate on their answers.

### 7.4.2 Asking questions

The teachers’ second most frequently-used instruction strategy was to ask questions at the start and during the discussions (15 questions, 27% of instruction themes). Understandably, questions were mainly used by teachers to initiate the discussion, and in three occasions they posted additional questions during the discussions.

The analysis of the 12 questions posted by teachers revealed that each question focused on one comprehension level per discussion. The following is an example of a question posted at the beginning of the discussion “What does the word “bright story” mean in this text”? **[Inferring word meaning]** Use the context of this word to answer the question **[Using context]** and use this word in a new sentence.” **[Application to the new context]** *(T1, D8, all groups)*. The teacher’s question focused on only one level of reading comprehension, inferential.

There were three questions that focused on the literal comprehension level (20% of total questions), including questions asking students to restate information stated directly in the text. For example, ‘According to the text, what are the main characteristics of Ebn Taimiah? **[Information mentioned explicitly in the text]** *(T1, D2, all groups)*. Six questions (40%) focused on making inferences from the text: drawing conclusions, inferring text ideas

and word meanings. For example, “You have learned about happiness. Write three inferences you can take from the text about happiness?” **[Drawing conclusions]** (T1, D1, all groups).

Analysis of the evaluative levels of comprehension questions (3 questions, 20% of total) revealed that these questions focused on the author’s purpose in writing the text, identifying the evidence that the author used to support the text’s ideas, and distinguishing between facts and opinions. Furthermore, these questions were supported with multiple-choice answers to help students understand them and also directed students to read examples in the students’ forum guide. For instance:

*Teacher:* “What is the main author purpose of writing the text **[Purpose of the text]**: 1) To entertain the reader; 2) To warn the reader; 3) To inform the reader about the benefits of using fingerprints?; or 4) Other (please identify) Use examples from the text to support your answer.” **[Provide choices]** (T1, D4, All Group)

Another example shows how teachers support questions with choices:

*Teacher:* “What evidence was used by the author to support this purpose? **[Evidence]** (1) Using non-Arab scientists’ opinions; (2) Listing some inventions created by Arabs; (3) Both answers; (4) Other evidence (please identify).” **[Giving choices]** (T1, D9, G2)

The questions posted during the discussions focused on distinguishing between facts and opinions, and identifying the author’s purpose and feelings. For example, in discussion 9, Teacher 1 posted the following question: “Does the author in this text provide facts or opinions” **[Distinguishing between facts and opinions]** (T1, D9, all groups). Another type of question posted during the discussion asked the students to identify the author’s feelings in the text, “How do you describe the author’s feelings in this text? 1) Joy; 2) Anger; 3) Fear; or 4) Proud.” **[Author’s feelings]** (T1, D9, all groups).

These results indicated that teachers initiated the 12 discussions by posting questions. These questions focused on the readings and three comprehensions levels. Teachers’

questions supported on-topic discussion and encouraged students to concentrate on comprehension strategies.

### 7.4.3 Modelling strategies

Teachers posted nine modelling and examples themes (16% of the direct instruction category) focused on modelling the comprehension strategies. Seven modelling themes were posted in the students' guide forum and two themes were posted during the discussion.

Teacher 1 wrote:

“For example, I’m looking for the main idea of the fingerprints text. **[Goal of the reading]** I’m asking myself, ‘What is the text about? What are the general and important ideas I can understand from the fingerprints text?’ **[Asking about important ideas]** I read the title and first paragraph and I understand that the text could be about the importance of fingerprints in our life. **[Inferring the idea from title]** I read each paragraph and I found that most paragraphs **[Reading each paragraph]** explained the benefits of fingerprints in our life, and therefore I think the main idea of this text is about the benefits of fingerprints in our life.”  
**[Modelling the strategy]** (*T1, D3, SGF*)

The teacher posted this statement as an example of how one can find the main idea in a text. The teacher thought aloud and described some processes on how to identify the main ideas. In these modelling themes, teachers helped students to understand how to apply a strategy. Teachers provided some models and examples that could be followed by students. Although, several modelling strategies were provided to the students, the results indicated that each comprehension strategy was modeled only once.

### 7.4.4 Diagnosing and clarifying misconceptions

The fourth theme of teacher instruction was identifying misconceptions and explaining the differences between some comprehension strategies. Only five themes were counted in this category (9% of instruction themes); all of them focused on explaining the

differences between literal and inferential comprehension as some students faced problems in distinguishing between them. The following example shows how the teacher applied this strategy:

*Teacher:* “What are the important inferences and benefits you got from this story? Do not mention information that is stated in the text [**Literal**], as you need to make inferences as described in the students’ forum guide.” [**Distinguishing between literal and inference levels**] (T1, D5, SGF)

*Teacher:* “I noticed that some answers focused on literal information, not making an inference; remember, inference focuses on information understood from the text that is not directly stated in the text.” [**Distinguishing between literal and inference levels**] (T2, D7, G4)

Teachers posted a few themes that helped students understand the differences between literal and inferential strategies and how those strategies could be applied.

#### 7.4.5 Explicit explanations of strategies

Analysis of the teachers’ posts in the instruction category shows that the teachers posted six themes in the students’ forum guide (11% of all teaching themes) that explain some comprehension strategies, including literal comprehension, drawing conclusions, identifying the main idea, evaluation, and inferring word meaning. The following example presents how teachers provide a direct explanation of distinguishing between main and sub-ideas of a text:

“This week you are required to identify the main idea and sub-ideas of the text. First, the main idea is the important idea of the text and what the whole text is about. [**Main idea explanation**] A sub-idea refers to supporting ideas that each paragraph contains, and you can find sub-ideas by reading each paragraph.” [**Sub-idea explanation**] (T1, D3, SGF)

Teachers supported students’ understanding of the strategy by giving a direct and explicit explanation of the comprehension strategy.

#### 7.4.6 Referring to other sources

The teachers posted only four themes (7% of total teaching themes) where they encouraged the students to expand their knowledge by reading other sources related to the text, including asking the students to read other books, articles and stories, or to borrow a book from the school library. For example, a teacher posted, “There is a good story that I read about this topic and if you would like to borrow it, then let me know.” (*T2, D8, G3*) Teachers’ themes regarding suggesting other sources to complement the students’ understanding of the text were limited.

#### 7.5 Summary of Teachers’ Involvement in AOD

This section aimed at answering the question: how do teachers facilitate students’ comprehension during AOD about a reading from a set text? Analyses of teachers’ posts indicated that teachers were actively involved throughout the discussion. Their contributions concentrated on direct instruction and encouraging students’ participation in discussions rather than on the design and organisation of the online discussion. The results indicated that teachers provided more support to the discussion that focused on inferential and evaluative comprehension, than literal.

The first category of teachers’ involvement was “**Design and Organisation**”. Teachers provided some support in terms of explaining the weekly tasks, focus of activities, and provided brief statements on how students should participate, discuss and interact with each other. However, the teachers’ design themes directed students mainly to answer the questions instead of providing guidance and details on how to engage in the online discussion with their peers.

“**Discourse Facilitation**” was the second category of teachers’ involvement in AOD. Teachers facilitated the online discussion by encouraging students to participate and post answers. In this discourse category, the teachers focused on thanking students for their

participation in the discussion and posting answers, while encouragement themes on interactions and responses among students were limited.

The third category of teachers' involvement in AOD was "**Direct Instruction**". Teachers supported students' understanding of inferential comprehension strategies more than evaluative and literal comprehension strategies. Teachers supported students' comprehension in different ways, including: (a) initiating discussions by posting questions; (b) providing some models and examples that could be followed by students; (c) supporting students' understanding of strategies by giving direct and explicit explanations of each comprehension strategy; (d) diagnosing and clarifying students' misconceptions on the application of a comprehension strategy (teachers applied this strategy rarely and only when necessary); and (e) suggesting other sources to complement the students' understanding of the text (again, limited occurrences).

Although teachers participated actively in the online discussion, to some degree their posts did not involve detailed information – with the exception of some posts on modelling and explanation of the strategies and a few instances of feedback. In addition, teachers did not provide detailed explanations and adequate practices on how students were to interact with their peers, nor did they emphasise the most challenging comprehension strategy (evaluative).

## **CHAPTER EIGHT**

### **STUDENTS' PERCEPTIONS OF BLENDING AOD WITH FTF CLASSES**

This chapter presents the findings of student interviews, which were conducted to further explore and understand the students' perceptions about their experiences of using AOD in reading classes. Semi-structured interviews were conducted to answer the sixth research question: what are the students' perceptions of the usefulness of using AOD on their learning and reading comprehension? Sixteen of the 32 students who participated in the AOD were randomly chosen for these interviews. Students were interviewed at the end of the 12 online discussions. The findings are organised based on the main categories of the interview questions, plus those that emerged during the analysis.

Table 27 presents the main four categories and sub-categories that emerged from the analysis. The first category focused on students' perceptions of their participation in AOD and its usefulness to their participation in FTF classes (perceived participation). The second category examined students' level of enjoyment in the AOD and what factors may have contributed to their positive or negative experience (perceived enjoyment). The third category presented students' perceptions of the usefulness of AOD on their learning and reading comprehension (perceived learning). The fourth category was about students' perceptions of difficulties faced during the discussion (perceived difficulties).



Table 27

*Main Categories and Sub-categories That Emerged From the Analysis of Students' Interviews*

<b>Main categories</b>	<b>Sub-categories</b>
<b>Perceived Participation (P)</b>	(a) PO: perceived participation in AOD (b) PF: perceived impact on students' participation in FTF classes (c) PU: students' understanding of participation (d) PFH: contributing factors for high participation (E) PFL: contributing factors for low participation
<b>Perceived Enjoyment (E)</b>	(a) EO: perceived overall enjoyment (b) EF: perceived factors for enjoyment (c) EFN: perceived factors for non-enjoyment
<b>Perceived Learning (L)</b>	(a) LR: perceived usefulness of AOD on students' reading comprehension strategies (b) LA: students' approaches to learning about the text in AOD (c) LF: factors that helped students to learn (d) LC: students' perceptions of changes in their learning (e) LTR: students' perceptions of teachers' roles in their learning
<b>Perceived Difficulties (D)</b>	(a) D: perceived difficulties faced during learning in AOD

## 8.1 Perceived Student Participation

The first category that emerged from student interviews focused on their perceptions about their participation in online discussion. This category was further divided into five sub-categories including: (a) students' perceptions about their participation in the online discussion; (b) perceived impact on students' participation in FTF classes; (c) how students understood their participation in online discussion; (d) perceived factors that encouraged and helped students to participate; and finally (e) perceived factors that hindered students' participation in online discussion.

### 8.1.1 Student participation in online discussion

Most students perceived online discussion as a useful method to promote their participation by giving them an opportunity to participate as much as they wanted. Eleven students (69% of those interviewed) stated that online discussion encouraged them to

participate. For example, one student said, “the online forum was useful and helped me to participate in the discussion on the weekly topics” (*Student 4 (S4), Group 1 (G1)*). Another student stated that the forum had provided an opportunity for him to actively post his answers and opinions: “I participated every week in the discussions; this forum provided me with a chance to post my answer and express my opinions; I think online discussion encouraged me to participate more” (*S8, G2*). These perceptions were indicative of the effectiveness of online discussion in promoting students’ participation by giving them the opportunity to post their answers and opinions.

### **8.1.2 Perceived impact of online discussion on FTF participation**

Another significant finding was that students felt their participation in FTF reading classes improved as a result of their involvement in online discussions. Ten of the 16 students who were interviewed (63%) perceived their participation increased in FTF classes after being involved in online discussions. One student stated, “I learned many things from online discussion; I participated in FTF reading classes more than before” (*S30, G5*). He further explained the change in his participation and how it increased: “now, more than before, I answer questions, I comment, and feel comfortable in asking questions in face-to-face class” (*S30, G5*). Three students (19%) reported that their participation in other subjects has also improved. For example, “I feel that in addition to reading I have participated more in other subjects as well” (*S19, G3*). Overall, students’ views showed that participation in online discussion had positive effects on FTF participation, enhancing their confidence to engage more in FTF reading classes.

### **8.1.3 Students’ understanding of online discussion participation**

Students had different understandings of how to participate in online discussions. Six students (38%) thought participating in online discussions involved answering teachers’ questions only. For example, “I accessed the forum and I participated every week.

[*Researcher*: How did you participate every week?] I answered the teachers' questions on the topics" (S23, G4). Ten students (63%) perceived participation as both answering the questions and responding to their peers – "I answered teacher questions every week and replied to some of my peers' posts" (S25, G4) – with four of these ten students providing more detailed explanation regarding how they replied to other students (*e.g.*, "I answered the questions every week about the readings, and I read my group comments, and I tried to reply to them; sometimes I thanked them for their answer" (S21, G4)). This indicated that not all students had the same understanding of how to participate in the online discussion. Some thought the forum consisted only of answering the teachers' weekly questions. However it is important to note that most students viewed participation in the discussion not only as responding to the teachers' questions but also as interacting with their peers.

#### **8.1.4 Perceived factors for increasing participation in online discussion**

Students who perceived online discussion as useful for to their participation (11 students, 69%) reported four main factors that helped them to engage in the online forum:

- a) Prior use of social online forums; seven of the 16 students (44%) had been previously involved in social online discussion. For example, one student stated, "I think online discussion was helpful for my participation... I'm a member of two social discussion forums in which some of my friends participate" (S10, G2).
- b) Family support; four students (25%) mentioned that they received help and support from their families, as was indicated by a student's comment, "my family supported and helped me to know how to participate in the discussion" (S25, G4).
- c) Encouragement from teachers and peers; ten students (63%) stated that they received encouragement and support from teachers, and only five students (31%) stated that they received support from the peers during online discussion. For example, one student said, "I felt I wanted to post more messages and participate every week when I

received comments from teachers or others saying ‘good answer’, ‘excellent’ or ‘perfect’” (*S10, G2*).

- d) Sufficient time for preparing responses; six students (38%) stated that the time frame was sufficient and flexible to prepare their posts, as indicated by one student: “I was not under any pressure because I had enough time to participate and prepare my posts” (*S28, G5*).

These results indicated that the previous experience, family support, encouragement from teachers and peers, and the flexibility of online discussion contributed to enhance students’ participation in the online discussion.

### **8.1.5 Factors for perceived low participation**

Students who did not perceive online discussion as useful for their participation (five students, 31%) outlined four primary factors:

- a) Lack of experience in social networking; five students (31%) had no previous experience with social online discussions. This is exemplified in the statement: “This is the first time that I used an online forum; I did not want to participate in the weekly discussions, it was difficult task” (*S23, G4*).
- b) Irresponsiveness to students’ posts; five students (31%) stated that their posts received no comments at all. For example, one student said, “I felt disappointed when I did not receive any reply to my posts; I thought my answer was incorrect so no-one paid attention to it, after that I did not want to post any messages any more” (*S15, G3*).
- c) Difficulty in understanding instructions for participation in online forum (*e.g.*, accessing the forum); five students (31%) stated that they did not understand the teachers’ instructions on how to access and participate in the online discussion forum. For instance, one student clearly stated, “I did not know how to participate in the online discussion forum” (*S1, G1*). Another student indicated that the instructions on

the number and length of posts were not clear to him: “For me, I did not know how much to write, and how long, and when to post them ” (*S15, G3*).

- d) Negative attitude toward the reading subject; four students (25%) expressed their dislike of the assigned text and reading subject. In this regard, one student stated, “Some weeks I did not want to participate as I did not like the reading subject” (*S6, G1*).
- e) Non-graded participation; the five students who did not perceive online discussion as useful for their participation and another four students (total, 9 students, 56%) suggested that their online discussions should have been graded to encourage students’ participation. For example, “I think teachers should mark students’ participation in the online discussion; I think marks will make students participate even more” (*S12, G2*).

These results suggested that the students’ lack of prior experience in social networking; lack of responses from their teachers and peers, an understanding of how to participate, and negative attitudes towards the reading subject had a negative influence on students’ perceptions of their overall participation in the discussion.

## **8.2 Perceived Enjoyment**

The second main category that emerged from interviews with students was perceived enjoyment of their participation in online discussion. Within this category, three sub-categories emerged, including, (a) overall perceptions of enjoyment, in which students were asked whether they enjoyed participating in online discussion or not; (b) perceived factors that contributed to students’ enjoyment of this experience; (c) negative factors for students’ lack of enjoyment of the online discussion.

### **8.2.1 Overall perception of enjoyment**

The majority of students who participated in the interviews enjoyed using online discussion as part of their reading classes, with 10 of the 16 students (63%) stating they enjoyed the experience. For example, one student said, “I enjoyed using the Internet and online discussion in reading classes” (*S32, G5*). However, six students (38%) did not enjoy online discussion. One student indicated, “I did not find it enjoyable; it was not easy for me to participate and discuss” (*S1, G1*). These results showed that the online discussion experience was enjoyable and interesting for most students.

### **8.2.2 Factors for enjoyment**

Students who enjoyed using online discussion mentioned several reasons for this including: (a) enjoyment of using computers and the Internet (seven students, 44% of all interviewed students), for example, “[The] Internet is an important part of my life, I like using the Internet, and for me this experience was enjoyable” (*S10, G2*); (b) enjoyment of teamwork (five students, 31%), for example, “It was very interesting and exciting to work with my friends and share ideas” (*S17, G3*); and (c) enjoyment from reading others students’ posts (four students, 25%) stated this as the main source for their enjoyment), as the following statement shows, “Some weeks, I went home and I spent one or two hours reading others’ posts; I enjoyed reading my peers’ messages” (*S25, G4*). These results suggested that students’ enjoyment of online discussion derived from the pleasure of using computers and the Internet, being part of a team and reading posts from their peers.

### **8.2.3 Factors for non-enjoyment**

The six students (38%) who did not enjoy using online discussion stated three main factors for this: (a) four students (25% of total students interviewed) did not like the subject, for example, “I did not like the online discussion; I’m not interested in reading classes, and they were boring” (*S15, G3*); (b) five students (31%) did not receive replies to their posts, for

instance, “For me, online discussion was difficult; I did not enjoy that class and sometimes I did not receive any comment on my post – I was disappointed” (*S6, G1*); and (c) four students (25%) found some of the questions difficult, for example, “I did not enjoy the online discussion, some questions were difficult to answer” (*S23, G4*). These results indicate that the main factors that played a role in students’ lack of enjoyment in online discussion were a negative attitude towards the subject, lack of responses to their posts, and the degree of difficulty.

### **8.3 Perceived Learning**

The third main category that emerged from student interviews focused on students’ perceptions of the usefulness of online discussion in their learning and comprehension. This theme was divided into five sub-categories: (a) perceived usefulness of online discussion on students’ reading comprehension; (b) learning approaches applied by students during online discussion; (c) perceived factors that assisted students’ learning; (d) students’ perceptions of changes in their learning after participating in online discussion; and (e) students’ perceptions of teacher roles and supports to their learning and participation.

#### **8.3.1 Perceived usefulness of reading comprehension**

Most students (12, 75%) found online discussion useful to their learning and reading comprehension. For example, one student stated, “I think it was useful for my learning; it helped me understand the text and the topic” (*S28, G5*). Students perceived online discussion as useful in their reading classes for answering the teachers’ questions. For example, one student mentioned, “The online discussions about the topics were useful to me; I understood the text, and it assisted me to answer the teachers’ questions about the topics” (*S3, G1*).

Online discussions helped students to grasp reading comprehension strategies such as making inferences from the text or identifying the author’s purpose in writing the topic.

Specifically, seven students (44%) stated that they learned about inferring main ideas, sub-ideas, and drawing conclusions through their participation in online discussion. For example, one of them stated, “Now I know how to find the main idea and sub-ideas from the text, and how to make inferences; before participating in the online discussion, this was difficult for me, but now I know how to find them” (*S30, G5*). Furthermore, four students (25%) stated that they learned about evaluative strategies, such as identifying the author’s purpose in writing the text and identifying supporting evidence. For instance, “I learned about how to find the author’s purpose in writing the text, and supporting evidence; initially, it was more difficult to understand, but reading other posts, it helped me how to learn how to find them” (*S8, G2*). Overall, these results indicated that students felt their participation in online discussion assisted them, particularly in understanding how to apply reading comprehension strategies so as to have a better understanding of the texts.

### **8.3.2 Approaches to learning**

Through the online discussion, students applied various approaches to learning and were asked about these in the interviews. Fourteen students (88%) reported that they read the weekly questions, read other students’ answers, read the text more than once, and then answered the teachers’ questions. For example, one student said, “I accessed the discussion forum from home, and I started by reading the teacher’ questions; sometimes, I read other students’ posts to see if they had answered the questions; I read the text a few more times, and I finally answered the question” (*S19, G3*).

Ten of those 14 students (63%) said that they accessed the discussions several times to see if their teachers had posted comments on their answers. One student stated, “After posting my answer to the question, I waited for a while, and then checked whether the teacher had commented on it” (*S17, G3*). In contrast, six students (38%) were mainly concerned with receiving comments from their peers on their posts. One student stated, “I checked if some of



my friends from my group have replied to my weekly posts” (*S21, G4*). In this regard, five students (31%) reported to have posted replies to their peers. For example, “I answered the teacher question, read others’ answers and replied to them” (*S30, G5*).

These results showed that most students were keen to read their peers’ answers. It is important to point out that they were particularly interested in receiving comments from the teachers and peers. Some students were more active in the discussion and they took an interest in replying to their peers.

### **8.3.3 Perceived factors that helped students learn**

Students who perceived online discussion to be useful to their learning named seven factors that assisted them, including: (a) flexibility of online discussion; (b) the ability to participate and voice their opinion; (c) being able to ask questions online at any time; (d) being able to read other students’ answers; (e) reading the teacher’s explanations and examples; (f) reading the text several times; and (g) receiving feedback on their posts.

The majority of students (12 students, 75%) reported that time flexibility of online discussions helped them to learn, allowing them to read more at their own pace and think carefully about their answers. Additionally, students reported that they had more time to prepare their answers and to edit their posts. For example, one student stated, “I had enough time to read the text, read students’ answers, and I could think more about my answer; I did not have to provide immediate answers as in face-to-face classes” (*S12, G2*). Seven students (44%) also reported that they could express their opinion without the restrictions that may be found in traditional classrooms. One student elaborated, “I could post messages and answer at my own pace, unlike face-to-face classes, in which the number of students is more than 20 and participation time is limited” (*S19, G3*). Another student stated, “In the forum, I could express my opinions and say what I want freely” (*S30, G5*).

Another contributing factor for facilitating students' learning through online discussion was being able to post questions and comments at any time. In so doing, students' questions were open not only to teachers but also to other group members as well. One student said, "It was helpful to me, when I had something that I could not understand I posted my questions to the forum" (*S17, G3*).

The majority of students (13, 81%) reported having benefited from reading other posts, providing them the opportunity to enhance their understanding of the topics. One student explained, "I learnt from reading my friends' answers; it was useful to me to see various answers to one question, and sometimes, I referred back to other students' answers for the same questions; this helped me to have a better understanding of the readings" (*S4, G1*). In the interviews, students often pointed out how beneficial it was for them to share ideas and information on the topic. For example, one student said, "In the discussion, students came up with various ideas and information on the topics, which helped me to understand them better" (*S10, G2*).

Teachers' explanations, modelling and examples, according to 10 students (63%), were major factors in facilitating their reading comprehension. For instance, one student mentioned, "I read the teachers' examples and explanations; I found them helpful for my learning" (*S10, G2*). In contrast, three students (19%) indicated that the examples were not clear or helpful: "I found some examples difficult to understand, especially the evaluative [comprehension] level examples" (*S23, G4*).

Reading the text several times enhanced the students' ability to answer the questions and, in turn, increased their comprehension capacity. For example, one student explained, "I read the text more than once to answer the questions about the text" (*S28, G5*). Another student added, "Sometimes, to answer the questions, I read the text three times" (*S19, G3*).

Peer feedback was not always perceived as helpful by students' learning, with only four students (25%) finding it beneficial to their learning. For instance, one participant who saw AOD as beneficial said, "Some feedback from my peers helped me to understand the topic and answer the questions" (*S4, G1*).

These findings showed that the most relevant factors of online discussion that contributed to students' learning were a flexible time to participate, think and prepare their answers, and, moreover, students were given a chance to express their opinions without restrictions and ask questions when they deemed necessary. This form of learning expanded students' opportunities in terms of time, space of learning and participation level. Furthermore, most students agreed that the teachers' examples, models and explanations supported their comprehension. Posts and answers from peers were viewed by some students as beneficial to learning. This form of learning encouraged students' motivation to re-read the text several times in order to provide accurate answers. Although students perceived reading peers' contributions useful for their learning, peer feedback, however, was not considered helpful by most students.

#### **8.3.4 Perceived changes in learning**

Students reported some changes in their learning after the introduction of online discussion, including: (a) attitudinal change towards reading classes; (b) increased studying at home and use of the Internet; and (c) learning through group discussion.

As a result of online discussion participation, some students' attitudes towards the reading subject changed. Four students (25%) reported a dislike of reading classes before the discussion but their interest increased after their involvement in discussing texts online. For example, one student indicated, "reading classes were boring to me and I was not interested in participating in them, but with the online discussion I become more interested" (*S21, G4*). Changes were also experienced by the six students (38%) who reported that after using online

discussion, they would read the texts several times to find the best answers to the teachers' questions. For example, one student reported, "I went home and read the texts several times to answer the questions; before I did not read more than once and sometimes I [only] read [them] at school" (*S25, G4*).

Other students also reported more learning at home after their participation in online discussion. In total, eight students (50%) mentioned they spent more time learning at home as a result of using the Internet and online discussion. One student stated, "Nowadays, I use the Internet for studying and learning more than before, and spend more time reading the text" (*S19, G3*). Similarly, another student indicated, "Now, I use the Internet for learning, while before I used it for games, chatting and YouTube" (*S30, G5*).

Fourteen students (88%) perceived online group discussion as a new experience and 12 (75%) found the online group discussion method useful for learning. A student said, "online group discussion is a new method; I had not used it before for learning" (*S19, G3*).

These findings illustrate that students reported some changes in their learning after participating in online discussion. Some students reported their attitudes toward the reading subject changed positively. Students spent more time learning at home, incorporated the Internet and the innovative online group discussion learning approach as valuable resources for their learning.

### **8.3.5 Perceived teacher roles**

Overall, students thought teachers were helpful in encouraging them to answer questions and to participate in the discussions. Ten students (63%) reported that the teachers encouraged them to participate in the discussion and answer the weekly questions. A student stated, "The teacher encouraged us to post messages through the forum; I was keen to post every week" (*S17, G3*). Although most students found the teachers' modelling and explanation of strategies helpful to their understanding, six students (38%) considered they

needed more examples and practice to better understand these strategies. For example, one student indicated, “I think the teacher’s examples were useful but there were not enough; some strategies were difficult to learn” (*S28, G5*).

Despite the fact that students perceived the teachers’ online presence as vital in various ways, six students (38%) pointed out that feedback was not expeditious. One student stated, “I thanked the teachers for their help, but I think they should [interact] more often, not only asking questions and providing feedback at the end of the week” (*S1, G1*).

Students perceived teachers’ FTF instructions, encouragement and support favorably as it motivated their participation in online discussion. FTF instruction remained a pivotal factor in supporting online discussion. One student stated, “Sometimes the teacher provided instructions and encouragement during the normal classes; it helped me a lot to discuss online” (*S10, G2*).

Despite the perceived slow provision of feedback from teachers, students perceived teachers’ roles as useful in supporting and guiding their learning and discussion, specifically, modelling, direct explanation and support during normal classes.

#### **8.4 Perceived Difficulties of Online Discussion**

Students perceived some difficulties during online discussions including: (a) not having a clear understanding of how to discuss with others; (b) not receiving immediate responses, or at all; (c) online discussion being time consuming; and (d) a feeling of isolation from others.

Most students perceived the dynamics of online group discussion as difficult. Ten students (63%) reported that learning through group discussions were difficult for them and that they did not know how to effectively interact in these discussion activities. One student remarked, “I liked to participate in the discussion, but knowing how to discuss was difficult, I

mean, I know how to answer but how to comment or discuss others' answers was not clear to me" (S25, G4).

A delayed, or lack of, response from teachers and peers was a major issue. Five students (31%) reported that occasionally they had no responses to their messages. One student claimed, "One thing that I did not like about online discussion was that sometimes I was not sure if my answer was correct or not because nobody replied, I felt disappointed" (S23, G4).

Another difficulty reported by nine students (56%) was the study workload. They stated that, at times, they could not complete the tasks due to the lack of time as they also had other school commitments, and as time progressed, the discussion become more demanding. For instance, "This experience is good but it was difficult to read all messages posted by students and teachers and to find answers in addition to other subjects' homework" (S10, G2).

Another problem with online discussions was students' feeling of isolation. Seven students (44%) reported they felt isolated from their peers when they did not receive prompt responses. One student expressed this in the following terms, "Some weeks, I felt no-one had read my message, so I had no response and I felt on my own; I prefer face-to-face classes because I can see others, talk to them and receive immediate responses" (S15, G3).

These results suggest that online group discussion posed some challenges to the students. According to some students, this was attributed to their lack of exposure to this method of learning. In cases where isolation was reported, the main cause was a lack of response from peers and teachers.

### **8.5 Summary of Students' Perceptions of Using AOD in Reading Classes**

This section aimed to answer the question: what are the students' perceptions of the usefulness of using AOD on their learning and reading comprehension? The major results of students' perceptions are summarised in the following points.

**Participation:** (a) Most students perceived online discussions as useful for their participation in both the online forum and FTF reading classes. (b) Most students understood participation as responding to the teachers' questions and interacting with others but only a few knew how to interact. (c) Contributing factors to high participation were previous experience, family support, encouragement from teachers and peers, and the flexibility of time. (d) The main factors for low participation were lack of prior experience in social networking, lack of responses from teachers and peers, a lack of understanding how to participate in online discussion, and negative attitudes towards the reading subject.

**Perceived enjoyment:** (a) Most students enjoyed AOD. (b) Factors for enjoyment included pleasure in using the Internet, team work and reading others' posts. (c) Factors for lack of enjoyment included a negative attitude toward reading subjects, lack of responses to posts and difficulty of teachers' questions.

**Perceived learning:** (a) Students felt that participation in online discussion assisted them in understating how to apply comprehension strategies and understanding of the text. (b) Students were keen to read their peers' answers and were interested in receiving comments and replying to others' posts. (c) Factors that helped learning were the flexibility of online discussion, opportunity for participation, being able to ask questions at any time, being able to read others' answers, reading teachers' examples, reading the text several times and receiving feedback. (d) Students perceived some changes in their learning, including attitudes toward reading subjects, increased studying at home and use of the Internet, and learning through online group discussion. (e) Students perceived teacher roles as useful and supportive for their learning, however there was minimal provision of feedback.

**Perceived difficulties:** Students faced some difficulties during learning in online discussion including: (a) having no clear understanding of how to discuss with others; (b) not

receiving immediate responses or at all; (c) the process being time consuming; and (d) a feeling of isolation from others.



## CHAPTER NINE

### TEACHERS' PERCEPTIONS OF USING AOD IN TEACHING ARABIC READING

Two teachers participated in this study: one taught the Arabic language (T1) and the other (T2) was the instructor of computer studies at the same secondary school. Both teachers participated as instructors and moderators of the 12 online discussions. The results of interviews with both teachers are presented in this section and structured according to the categories covered in the interview questions and those that emerged from the interviews themselves. These categories included: (a) teachers' prior experiences in using online discussion; (b) using online group discussion as a teaching method; (c) online discussion and reading comprehension strategies; (d) teachers' roles; (e) challenges to teachers; and (f) teachers' suggestions for improving online discussion.

#### 9.1 Teachers' Prior Experience in Using Online Discussion

Both teachers had prior experience participating in social online discussions. However, they had not used online discussion for teaching and learning purposes. The Arabic language teacher stated, "I had experience with some social online discussion forums and moderated a section in a social forum but it was an informal discussion" (*Arabic teacher, (T1)*). The IT teacher mentioned having more experience with online discussions, but not in an educational setting:

"I'm a member of some forums, which focus specially on computers and technology, and of informal discussion once, but I had not been involved in online discussion forums for teaching; I thought it would be difficult to implement them in high school." (*IT teacher (T2)*)

## 9.2 Using Online Discussion as a Teaching Method

Both teachers considered online discussion a useful tool for teaching at the secondary school level. Perceived benefits included: (a) increased student participation; (b) providing new assessment methods of learning; (c) providing students with group learning experiences; and (d) teacher exposure to technology-based pedagogies.

Relating to an increased level of student participation, the Arabic language teacher reported that, in FTF classes prior to the introduction of online discussion, some students were often shy and avoided participation; however in the AOD these students became active.

“I think this was a useful method, which motivated students to participate more and more and gave them the opportunity to voice their opinions. I noticed that some students who did not participate in the classroom and were shy, in the online forums they posted messages and answers about the topics. I was happy to see that.” (*T1*)

The same teacher noticed that some students in FTF reading classes asked more questions than they did as a result of participating in online discussion: “I noticed that now some students asked more questions in the face-to-face classes than they did before” (*T1*). The IT teacher pointed out that online discussion gave students more time to participate and answer; he added, “Online discussion was a helpful method in which all students are encouraged to participate, and they have enough time to think about their answers and edit, and expand their learning time past school hours” (*T2*).

Both teachers agreed that the application of online discussion helped to promote students' participation by solving some FTF limitations such as short class time (45 minutes) and large number of students in each class. The Arabic teacher stated that “time in face-to-face classes is limited with 45 minutes for each class and there is large number of students (*e.g.*, 20 students) which limits the opportunity for all students to participate.... these

problems could be solved by using online discussion; students have more time to participate and answer the questions (*T1*).

The second finding concerning the perceived benefits of using online discussion in reading classes was that it provided teachers with new methods to assess students' learning and participation in the reading subject. The Arabic language teacher stated, "As a teacher, from the ongoing discussion I could understand what students' needs were, or know whether they understood the topic or not" (*T1*).

The third advantage was that online discussions provided the teachers with a great opportunity to introduce group work, a practice that often difficult to be adopted in traditional classes because of time constraints. The IT teacher said, "I think it was a good opportunity for teachers to promote group work with students; this cannot always be implemented in the classroom as there is not enough time" (*T2*). The Arabic language teacher reported that this method allowed him more time to ask more questions about the readings and to give students more activities and exercises so as to enhance their comprehension of the text. "In the classroom, it was difficult to ask many questions and do different activities" (*T1*).

Teachers perceived that their involvement in the design and moderation of the AOD enabled them to learn more about the use of technology in teaching. The Arabic language teacher stated, "It was a good experience to be involved in this forum, it helped me learn more about how to use technology for contemporary teaching" (*T1*). The IT teacher stated, "I think online teaching is an important approach, considering students' widespread use of technology, particularly of the Internet" (*T2*).

Overall, the teachers viewed the use of online discussion for teaching and learning as useful. Teachers indicated that online discussion triggered students' participation, both in the online forum and FTF classes. In terms of their participation as designers and moderators of

the forum, the experience provided them with an insight into the benefits of using technology for teaching purposes.

### **9.3 Online Discussion and Reading Comprehension Strategies**

Both teachers reported that using online discussion was useful to students' comprehension. The Arabic language teacher stated, "I think students benefited from online discussion in reading classes" (*T1*). This, according to the teachers, was reflected in the type of questions students asked in the classroom. The Arabic language teacher indicated, "Some of the questions asked by students in face-to-face classes were related to the application of comprehension strategies – that is, how to find main ideas and how to find supporting evidence within the text – while prior to their online participation, students' questions focused on literal information" (*T1*).

Teachers reported that online discussion gave students an opportunity to learn from each other's understanding of the topics. The Arabic language teacher said, "I think online discussion gave students a good chance to learn from others' answers" (*T1*), also reporting that online discussion encouraged students to read the text several times in order to answer the questions: "I asked some students, 'Did you read the text this week at home?' Some students mentioned that they read it several times before answering the questions" (*T1*).

The IT teacher reported that he observed some students supporting and encouraging others, which means students were active, not passive: "I read some posts in which some students thanked others for their answers, answered their questions. They were active in helping their friends" (*T2*).

According to the teachers, the students' greater emphasis on learning about comprehension strategies was the most beneficial aspect of the online discussion. Teachers attributed this partly to the fact that various examples of comprehension strategy were provided. This positive result was evident in the many answers to strategy-related questions.

One teacher explained, “Students spent much time reading about the strategies and were able to find various examples for answering the questions on these strategies; this helped them to understand more and more” (T1).

In sum, the teachers’ views regarding the benefits of online discussion were positive, particularly in that it enabled students’ learning about comprehension strategies, both through the provision of examples and also with support from their peers.

#### **9.4 Teachers’ Roles**

Teachers perceived their roles in the discussion as: (a) starting online discussions by asking questions about the topics; (b) encouraging students to post and participate; (c) providing students with feedback; and (d) providing examples on how to answer questions. These roles were summarised in the words of the Arabic language teacher:

“My role in these discussions were to post one or two questions on the topics. I also tried to encourage students to post more messages, and provide them feedback on their answers. I mainly focused on encouraging them to post messages and provided models for answering questions correctly. When faced with technical problems I asked [the IT teacher] for help.” (T1)

The IT teacher described his role as “providing feedback, encouraging students to participate and giving technical support” (T2). Teachers reported that they accessed the forum several times a week and they tried to post messages to each group.

“In my case, I accessed the discussion at least three times per week; some weeks I accessed five times. It was exciting to see how students were doing in the forum. In fact I did not read all messages and answers. In my posts I encouraged them and provided some feedback at the end of the discussions.” (T1)

The Arabic teacher indicated that he experienced some changes in his role, such as the teaching approach in reading classes. He described that in normal FTF classes, he started by

activating students' prior background and knowledge about the topic, and then asking students to read the text in silence; after that he read aloud and asked some students to read aloud and explained some comprehension strategies; at the end of the class, the teacher gave students an opportunity to ask some questions about the vocabulary, text ideas and the lessons and he also provided feedback on students' answers. In the online discussion, the teacher felt that his role was not only giving information, leading class activities and asking question but also encouraging students to participate in the discussion.

These results indicated that teachers saw their roles as participation promoters, discussion leaders and reading comprehension supporters. However, it is worth mentioning that peer-to-peer interaction during the discussion received limited attention from teachers.

### **9.5 Perceived Challenges**

Teachers faced some difficulties and challenges in leading and moderating the online discussions. The first challenge was their lack of experience in using this type of technology for the teaching. The Arabic language teacher stated, "I actually found it very difficult to prepare and manage a discussion like this; I found it very different from face-to-face classes, it needs more preparation, I did not study any course about it" (*T1*). Similarly, the IT teacher stated, "Teaching through this mode of learning is new to me; it was difficult to assist the Arabic teacher in moderating the students' discussion" (*T2*).

The second difficulty perceived by the teachers was that teaching and moderating online group discussion constituted a heavy workload and was time consuming. The following statement clearly explains teachers' views regarding the difficulties posed by this method of teaching: "I found it was a heavy load to follow the students' discussion; it required much preparation and reading many messages per week; I tried my best, but in fact I could not read all messages, sometimes I provided general feedback and encouragement"

(T1). The Arabic teacher mentioned that he felt the support and instructions were not adequate to help students' learning, because of a heavy workload and limited time for discussion.

The third challenge reported by teachers was that some levels of reading comprehension were difficult for students to master and students needed more time and practice. Due to time constraints, it was difficult for teachers to address these issues. In this regard, the Arabic language teacher said, "I know that students found some comprehension levels challenging, for example, the evaluation level, as the time was not enough to provide students with sufficient activities" (T1).

The fourth difficulty was that online group discussion was new to students and had not been previously implemented by these teachers. This difficulty is elaborated in the following statement from the Arabic language teacher:

"In my case, I had not used online group discussion in my teaching. I think it was not easy for me to apply or manage it, and the real problem is that in my class students had not learnt through online group discussion before." (T1)

The Arabic Teacher pointed out that the main teaching and learning styles influenced how students participated in online discussions. As the Arabic teacher stated students tend to replicate how they learn in FTF classes in online discussion activities. The teacher further described the opportunities to apply group discussion methods in FTF classes were limited. The teacher stated that students did not have enough time to participate due to the large number of students in the class and short time. He added also the typical FTF teaching styles focused and centered on teachers in that they prepare the lessons, start and manage the reading classes, ask questions, and evaluate and assess the students' answers, as well as focusing on literal comprehension more than other levels. The Arabic teacher described that in the learning activities in FTF classes students' roles were to passively receive information by listening to a teacher, ask few questions, had limited time to discuss with others, and answer the teacher's questions.

The results suggested that the challenges experienced by teachers during this experiment were due to a combination of factors, including lack of prior experience, the intrinsic workload of this approach to teaching, limited time for teaching comprehension strategies adequately and students' unfamiliarity with online group discussion.

## 9.6 Teachers' Suggestions

For the successful application of online discussion teachers made the following suggestions. The Arabic teacher suggested providing adequate training on how to apply online discussion in teaching, saying, "I have some suggestions to make this experience effective; I think teachers should have training" (T1). Both teachers agreed that it is important to train teachers on how to design and manage online group discussion, with the IT teacher adding, "I think the training should involve how to design, organise and manage online discussion and collaboration learning" (T2).

Furthermore, both teachers recommended that students should attend training on using online discussion for learning. The Arabic language teacher expressed this in the following words, "Training should be given to students. [*Researcher: What should this training involve?*] For example, I suggest training on how to use online discussion and most importantly on how to discuss with others" (T1). The Arabic teacher also suggested that it could be better to provide more opportunities to apply group discussion in FTF classes before asking students to participate in online learning as, in his opinion, students replicate online what they experience in FTF classes.

The teachers also suggested that beneficial online discussion for teaching and learning requires participation of more than two teachers. The Arabic language teacher said, "I think more than two teachers should be involved in moderating online discussion effectively" (T1). Both teachers agreed that in order to maximise the benefits of online discussion, the



moderators' commitments to other subjects should be reduced. The IT teacher stated, "Teacher's load must be minimised" (*T2*).

The teachers suggested that online discussion should not be restricted in terms of subjects and time. On the contrary, it should be open for more subjects and implemented all year round. The Arabic language teacher said, "I think it will be more effective if online discussion is applied during the year, and with more subjects" (*T1*).

Both teachers suggested that there are additional ways to improve the students' participation and learning with online discussion, for example, allowing students to select topics. To this effect, the Arabic language stated, "I also think it can be effective if we let students choose their reading topics" (*T1*). In addition, both teachers believed that students should take more responsibility for their learning and participation in the AOD, for instance, initiating the discussion through questions: "Students should take more responsibility by asking questions about the topic instead of teacher-initiated discussion" (*T2*).

Lastly, the teachers suggested that a literal level of comprehension should be excluded from the online discussion, as it did not challenge students' understanding. This was reflected in the Arabic teacher's comment: "I suggest to not include literal strategies because these are easy to understand" (*T1*). Both teachers believed that it is more effective to concentrate on one level of comprehension at a time rather than all three. The IT teacher stated, "In my opinion focusing on one level of comprehension at a time can be more effective than studying three levels of comprehension together" (*T2*).

## **9.7 Summary of Teacher Interviews**

This section aimed to answer the question: what are the teachers' perceptions of the usefulness of using AOD on teaching and learning in reading classes? The major results of teachers' perceptions are summarised in the following points.

***Teachers' prior experience:*** Teachers had experience in participating in informal and social online discussions. However, they had not applied these for teaching.

***Perceived advantages:*** Teachers perceived some advantages in applying online discussion in teaching reading, including: increasing students' participation; providing an opportunity to apply group discussion as a teaching method and for assessment; using technology in teaching; and supporting students' comprehension and understanding of applying comprehension strategies.

***Perceived teacher roles:*** Teachers perceived their roles as asking questions about the topics, encouraging students to post and participate, providing students with feedback, and providing examples on how to answer questions.

***Perceived challenges:*** The main challenges teachers faced were a lack of prior experience in the field, the heavy workload of this approach to teaching, limited time for teaching comprehension strategies adequately and students' unfamiliarity with online group discussion.

***Suggestions:*** The teachers made some suggestions, including: providing adequate training for teachers in how to moderate online discussion and for students on how to use online discussion; increasing the number of moderators; applying online discussion to other subjects; giving students more responsibility in choosing the topics and managing the discussion; and excluding the literal level of comprehension.

## **CHAPTER TEN**

### **DISCUSSION**

#### **10.1 Introduction**

This chapter discusses and interprets the major findings presented in the results chapters in light of the previous studies covered in the literature chapter. As discussed in the introduction, this study is designed to explore how blending AOD instruction (small group discussion) with FTF reading classes impacts students' comprehension achievement and contributes to the current practice of teaching Arabic reading comprehension in a Saudi Arabian secondary school. The AOD activities in this study were implemented and examined in order to investigate students' learning processes, participation and interaction patterns in AOD. Overall, the main aim of this study was to explore how giving students the opportunity to discuss and interact online with peers in small groups about the text and comprehension strategies contributed to their learning in reading classes.

The results when comparing between groups showed that blending AOD with FTF did not produce a significant improvement in students' Arabic reading comprehension achievement when compared with FTF learning. Therefore in this particular case, a conclusion cannot be made as to whether BL is more beneficial than FTF alone since the difference between the two groups is too small to be statistically significant at a 95% level of confidence.

However, the results of the comparison within groups revealed that students who participated in the FTF group demonstrated a significant improvement from pre-test to post-test scores in their overall and literal comprehension. In contrast, the students who participated in BL demonstrated significant improvement from pre-test to post-test in overall, literal, inferential and evaluative comprehension scores. These results will be discussed in this chapter.

The results generated from the analysis of students' AOD and interviews showed that blending AOD instructions with FTF classes benefited students' reading comprehension, participation and learning processes in various ways, including supporting students' application of comprehension strategies and skills, increasing participation rates and promoting some active types of interaction in reading classes. Furthermore, the results of this study showed the most important factors that encourage students to engage in online discussion about reading comprehension in this particular context and highlighted the changes in teaching and learning approaches and roles that students and teachers experienced and perceived during their involvement in AOD. In addition, the findings of this study revealed the importance of teacher roles in scaffolding the learning processes, and the major challenges that were faced by teachers and students in the implementation of AOD. The insights gained from these complementary perspectives and findings would help to inform designers and instructors to design effective teaching and learning instruction applying AOD to support FTF learning and to improve the current practice of teaching reading comprehension.

The previous salient findings will be discussed in this chapter in light of the research questions. This discussion will be organised as follows: (a) the effect of blending AOD with FTF classes on the reading comprehension achievement of first year of secondary school students (between- and within-groups comparison); (b) the potential of AOD design on supporting students' participation; (c) the types of student interaction in AOD and possible contributions to reading comprehension and learning processes; and (d) the students' and teachers' overall perceived usefulness of the AOD to the current practice of learning and teaching of reading, the perceived encouraging and contributing factors that helped students' participation and learning, and the perceived challenges that students and teachers faced during online discussion activities.

## **10.2 The Effect of BL on Students' Reading Comprehension Achievement**

The first and second research questions of the study focused on the effect of blending AOD with FTF reading classes as well as on the effect of each learning method on the reading comprehension achievement of first year secondary school students. The results of the comprehension tests used in this research showed that although the BL group adjusted post-scores means were higher than the FTF groups, there was no significant difference between both groups in their comprehension post-test scores of literal, inferential, evaluative and overall comprehension. These results imply that blending AOD with FTF learning was not more effective than FTF learning for gaining significant improvement in students' reading comprehension achievement. As stated above, although there was no significant difference between the groups, the comparison within groups showed that students in the BL group improved significantly from pre- to post-test across all comprehension levels while the FTF group improved only in overall and literal comprehension. Data generated from discussion analysis and interviews showed that teaching and learning instructions used in AOD bring about some benefits for students' comprehension and learning.

In the following paragraphs the discussion will focus on, first, comparing the study results with previous studies in terms of the insignificant effect of BL on students' comprehension compared with FTF alone; second, the possible factors and explanations for the insignificant effect between groups; third, the effects of each learning method (within-groups comparison) on students' comprehension; and finally, other aspects that demonstrate how the teaching and learning instruction used in AOD supported students' learning about comprehension strategies.

### **10.2.1 Comparison of the study results with previous studies**

Due to the lack of the prior research investigating the effect of blending AOD with FTF learning on Arabic reading comprehension at secondary school level in a Saudi

education context, a comparison is conducted with other related studies that have been done in different contexts (*e.g.*, in English-speaking countries). The results of the current research support some previous studies conducted in different contexts that established no significant differences between online discussion or BL versus FTF learning. For example, Zhang et al. (2007) found that there was no significant difference in achievement tests that related to language skills of reading, grammar or vocabulary between students in BL (regular classroom and online group discussion about the topic) and those who participated in traditional classroom only. The results of this research are in line with Cook's (2008) study that found that the use of online group discussion after FTF classes does not result in a significant change in critical thinking over time. Although these studies were conducted in different contexts and applied various designs and methods of instruction, they imply that the application of online discussion that complements traditional FTF classes does not necessarily provide a significant change in students' learning and achievement. Yu's (2009) study also found that blending online group discussion with whole group FTF discussion did not result in any quantitatively measured improvements on students' academic achievement as the FTF group outscored the BL group. The overall teaching instruction in the studies discussed above were similar to the instruction applied in this study, that is, using group discussions about reading or a story and giving students the opportunity to discuss with others, comment and participate. However, the levels of teacher involvement and support were different across studies.

Encouragingly, there is some previous research showing a positive impact of blending online group discussion with FTF instruction. For example, Jewell's (2005) study showed that the use of an online group discussion board as a supplement to classroom reading instruction increased students' reading abilities as measured by reading quiz pass rates. Similarly, another study conducted in Taiwan with EFL English students at college level in an experiment for 12

weeks duration showed that incorporating synchronous and asynchronous discussion into regular class instruction improved reading comprehension post-test scores more than traditional methods alone (Hsieh, 2009).

In terms of critical thinking, the results of the current study differ from some previous research that focused on the effects of using online group discussion to support FTF instruction on critical reading. For example, Zhang et al. (2007) found that the blending of online discussion with FTF learning supports students' critical thinking compared with FTF learning alone. However, comparing results from this study with previous research should be done with caution as the contexts of previous studies and definitions of critical thinking are different. For example, in other studies the indicators of critical thinking included justification, critical assessment and linking ideas, while the intent of the current study was not to assess critical thinking, but applied a model of reading comprehension and included indicators of the critical (evaluative) level, such as identifying the evidence used by the author to support ideas in a text.

As shown above from the comparison between the results of the current study and previous research studies, there is a lack of consistency regarding the impact of blending online discussion with FTF instruction on students' reading achievement and learning outcomes. Some studies found insignificant impact, while other studies confirm the effectiveness of BL that involves online discussion with FTF teaching on students' achievement. Disagreements about the effectiveness of the use of online discussion to supplement FTF instruction can be attributed to several factors including, but not limited to, technology, as technology is only a vehicle and medium, and any change in learning outcomes cannot be attributed to the impact of technology entirely (Black, 2005; Zhang et al., 2007). The various factors and additional elements that may affect the learning and reading comprehension outcomes and achievements could include design of learning activities,

learners' motivation to read and write (Cacciatore, 2010), the differences between conditions in instructions, pedagogy and period of intervention (USA Department of Education, 2009).

Another contributing factor to the differences between the results of this study and some previous studies could be the factor of differences in existing learning and teaching styles and methods. As described in the Introduction, this study was conducted in one school in the Saudi education context, which is different from those mentioned above, which have been conducted mainly in English-speaking contexts in Western countries. In this specific case, the commonly used pedagogical approach is teacher-centered learning in which the constructivist approaches depending on dialogical interaction (Alexander, 2001) are limited (Qenaey, 2008). Factors related to pedagogical differences between one learning context and another include typical styles of teaching pedagogy such as traditional vs. constructivist. For example, in the current study, students mentioned in the interview that online small group discussion was a new learning experience for them and indicated that group and collaborative learning were not common strategies in their FTF reading classes. The feedback about this Arabic reading class aligns with traditional models of teaching described by teachers in the interview, where the teacher-centered approach is applied, and only limited time and opportunities were given to group discussion during FTF classes.

Another important factor to highlight in relation to the difficulty of comparing previous research results is the variations between methodological and instructional designs that were employed in other studies. This issue was raised by Lipponen et al., (2003) who indicated that comparison between studies in computer-supported collaborative learning is difficult due to differences in various aspects, such as, instructional design, teacher preparation and commitment, technical support, technologies used and the use of particular software applications. While the difficulty of comparison amongst studies is acknowledged it is important to establish, where possible, whether the factors identified by Lipponen and



others, may have contributed to the lack of significant differences between groups in this particular instance.

### **10.2.2 Possible causal factors for the insignificant effect of BL on students' comprehension**

In the following sections, the discussion focuses on possible explanations and contributing factors to the insignificant effect of BL on students' comprehension achievement compared with FTF learning alone in this study. These possible factors include: a) limited time for AOD implementation; b) degree of difficulty of the comprehension levels; and c) the teachers' support and scaffolding during AOD. That is followed by a discussion of possible explanations of the observed significant improvement in comprehension – at all levels for the BL group and at the overall and literal levels for the FTF group.

#### ***10.2.2.1 Limited time for online discussion implementation***

It is proposed that the short length of the experimental implementation could be a possible reason for the non-significant differences between the effect of BL and FTF learning on students' reading comprehension post-test scores, as learners spent only a short time discussing the comprehension tasks online. Only 12 AODs over six weeks were allocated to the group discussions incorporating the three comprehension levels, literal, evaluative and inferential. Therefore the time allocated to these AODs may have been insufficient for BL students to achieve noticeable improvement compared with FTF students. Although the researcher intended to implement the AOD for a longer period of time, due to the school schedule and teachers' and students' workload, the experiment duration lasted for six weeks only. Time has been reported in previous research as a factor that could limit students' improvement and changes in learning outcomes and participation (S. Yu, 2009; Zhang et al., 2007). Therefore, it could be implied from the results of the current study that the short length of the experiment may have affected the potential for change that the small group

discussion instructions used in the AOD could have made to the students' comprehension when compared with FTF learning.

Moreover, the short time allocated for discursive comprehension tasks online may have not been sufficient for providing adequate support and instruction that could have resulted in considerable effects and improvement in students' comprehension in the BL compared with FTF group. Previous research into reading comprehension suggests that adequate scaffolding, support, explicit explanation of the comprehension strategies (Baumann, 1984; Cameron, 2009; Clark & Graves, 2005; Duke & Pearson, 2002; Prado & Plourde, 2011; Tierney & Readence, 2005), as well as provision of sufficient time for discussion (Fielding & Pearson, 1994) are critical for enhancing students' comprehension. The limited time for discussions in the AOD to focus on different comprehension levels might also have resulted not only in lack of opportunities for teachers' scaffolding and support but also for students' practice and application of comprehension strategies. It is proposed that the combination of these factors may have contributed to the non-significant differences between the comprehension achievements of the two groups. The main implication generated from these results is that the allocation of sufficient time for the introduction of BL design and specifically online small group discussion is important in order to give teachers adequate opportunity to support and scaffold students' learning and discussion in reading classes. For this study, it could be inferred from the group discussion above that six weeks were not sufficient for scaffolding the students' discussion, learning, and comprehension in Arabic reading classes. Students need increased opportunities to practice, discuss, and learn about comprehension strategies online, particularly when they are being introduced to a new learning approach (online small group discussion).

#### ***10.2.2.2 Degree of difficulty of comprehension levels***

The second likely factor that could explain the insignificant differences between the results for the two groups is the level of complexity of the comprehension tasks tested in this study. For example, for the literal level, as reported in the results of the comprehension tests, the students' comprehension scores were high before starting the AOD. The result of no significant change in literal comprehension scores was neither surprising nor unexpected by the researcher. The literal level of comprehension is considered a basic level of comprehension as it deals with understanding information that is explicit in a text. It is evident in this study that learners did not face major difficulties with this level of comprehension prior to their experience with the online context. As established in the literature, literal comprehension does not require readers to use higher thinking skills as it focuses on the directly and explicitly stated information in the text (Day & Park, 2005; Karlin, 1978; Morris & Stewart-Dore, 1986). This view is upheld by interviews with both teachers in which they agreed that this level is not difficult and did not need to be included in the online discussion as students were already achieving high scores for literal understanding. The Arabic reading teacher pointed out that the main focus of their teaching and questions in FTF classes was on the literal level more than evaluative. The results derived from this study imply that literal comprehension is supported in the current practice of teaching Arabic reading in which the main emphasis is given to teaching and practicing this level in the traditional mode of FTF learning. A further implication could be that the main focus of designing teaching and learning instruction used in the AOD to enrich the FTF classroom work should be given to the other more difficult comprehension levels (inferential and evaluative).

Unfortunately, despite the suggestion by the teachers that AOD would be more useful for developing higher order thinking this study indicates that the blend of AOD with FTF

instructions did not produce significant differences in inferential and evaluative comprehension when compared with FTF learning. For example, in the evaluative comprehension post-scores, no significant differences were found between the control and BL groups. This level of understanding is considered by many authors and experts to be the highest level in the comprehension taxonomy that requires students to apply various higher order processing skills, abilities and knowledge as well as to apply both literal and interpretative thinking (Day & Park, 2005; Pearson & Johnson, 1972; Roe et al., 2010). The teachers' interviews showed that both teachers agreed that this level is difficult and more challenging than literal comprehension level to students. These results are supported by the transcript analysis that showed students asked for support during the discussion that focused on evaluative level more than other levels. This suggests that the students required greater support through a more effective instruction applied in BL design in order to cope with the higher levels of difficulty of comprehension in Arabic reading classes.

#### ***10.2.2.3 Teachers' support and scaffolding***

In the current study, the main teaching and learning approach used in the AOD was small group discussion. Using group discussion as a pedagogy and teaching method has been described as effective in promoting reading comprehension (Applebee et al., 2003; Fall et al., 2000; P. Murphy et al., 2009). However, in this study, the small group discussion method in AOD was not effective for producing significant improvement in students' comprehension achievement when compared with FTF learning. A potential explanation for the insignificant differences between groups could be related to the quantity and quality of teacher support, instructions and scaffolding offered in the AOD. As found in the results of content analysis of the teachers' discussion, to some degree teachers' post did not involve detailed information or practice of each comprehension strategy – with the exception of some posts on explanations and modelling of some comprehension strategies and a few examples of feedback. Teachers

explained new concepts only in the beginning of each discussion, provided one model and example, and only gave short feedback responses rather than engaging students in ongoing exchanges. Arabic teachers mentioned that he felt the support and instructions were not adequate to help students' learning, because of heavy workload and limited time for the discussion. The lack of detailed information, feedback, and discussion practice could have led to the non-significant impact of group discussion instruction and activities used in the BL compared with FTF. These findings imply that the provision of more detailed information, explanation, feedback and modelling of the comprehension strategies by teachers as well as adequate practice may be important to provide effective instruction and pedagogy to support students' comprehension (Tierney & Readence, 2005).

Although, the lack of detailed teachers' feedback, information, practice, modelling and explicit explanation of the comprehension strategies could be one possible factor for non-significant differences between groups, these instructions provided some support for students' learning and application of comprehension strategies. This was reflected in the increased number of students who posted answers to the questions that focused on all levels of comprehension. Another indicator of the usefulness of teachers' modelling, examples and explanation of the comprehension strategies may be the fact that some students' referred to the teachers' explanations to assist others in understanding these reading comprehension strategies. The results revealed that in 27 themes (59% of students' scaffolding themes) students provided scaffolding for others by giving explanations and examples of comprehension strategies.

Previous research suggests that provision of explicit instruction of comprehension and cognitive strategies is useful and important for students' comprehension (Dymock, 2007; Eilers & Pinkley, 2006; Neufeld, 2005; Nist & Kirby, 1986; Rajabi et al., 2013; Rosenshine, 1995). This point is exemplified in this study when students posted eight themes (17% of the

scaffolding themes) referring and guiding others to use the teachers' examples from the forum guides. The results of this study suggest that the students' application of some comprehension strategies could be a result of the teachers' provision of these models and instructional types of scaffolding as well as their discussions about these strategies online.

### **10.2.3 Effects of BL and FTF learning on students' comprehension (within groups)**

Previous sections focused mainly on the possible factors for insignificant differences in comprehension between both groups. However, other tests results (within-groups comparison) in this study showed that there was a significant improvement before and after the experiment at all levels for the BL group and at some levels for FTF group. The results of the comparison within groups gives only an initial indication and possibility that the improvement in some comprehensions levels from pre-test to post-test scores may be attributed to both the learning conditions and instruction (BL or FTF). However, in the case of the BL group other detailed data and analysis generated from students' and teachers' AOD and interviews could help to explain how the instructions used in the BL contributed to the improvement in students' comprehension and learning. On the contrary, for the FTF group, there were only some data collected from teachers' interviews and the information provided about the instructional design used in FTF classes, which makes it difficult to explain in-depth why some improvements were observed but not others.

For the control group, who learnt through FTF classes, the improvement in overall and literal comprehension may be attributed to various factors, and the instruction provided by the teacher in the FTF classes and homework activities could be one of them. The teacher in the FTF classes used the homework sheet to provide some explicit explanation and examples of some strategies and gave students questions to be answered at home that focused on these strategies. Explicit instructions and examples are proven to be effective for students' comprehension (Duke & Pearson, 2002; Rajabi et al., 2013; Tierney & Readence, 2005) as

well as the answering questions strategy (NICHHD, 2000). To obtain more understanding of the possible factors that led to this increase, future research would focus on collecting data on FTF class interaction and instruction, including FTF students' answers and their perceptions.

For the BL group, a significant improvement from pre- to post-experiment was observed. However, it is difficult to conclude if the improvement was due to the AOD instruction. This is because there are various factors that could have an influence on students' comprehension, such as pre-test scores, as indicated by ANCOVA results. In the case of the BL group, other data collected from teachers' and students' AOD transcripts and interviews could help to explain the possible contribution of group discussion instruction used in the AOD to students' learning, which will be discussed in the following sections.

#### **10.2.4 Contribution of blending AOD with FTF classes to learning comprehension strategies**

Despite the insignificant effect of BL on students' reading comprehension achievement when compared with the FTF group, the results of this study showed that the small group discussion activities used in the AOD brings about some benefits for students' understanding and application of comprehension strategies that could contribute to the improvement across all comprehension levels from pre- to post-test scores for the BL group. Students applied some comprehension strategies through their interactions in the online environment. There are three indicators of their application of comprehension strategies. First, the results of the content analysis of students' AOD showed the number of students who posted answers to teachers' comprehension questions about the texts increased over the discussion period. For example, the percentage of students who posted answers to literal questions increased from 66% to 88%, and to inferential questions increased from 44% to 78% of total students. Second, students posted 46 scaffolding comprehension strategies themes (9% of students' discussion) in which they provided their own explanations of

comprehension strategies as well as feedback to other students. Third, seven student interviewees (44%) reported that they felt they learnt how to make inference from texts and four (25%) stated that they learnt about evaluation strategies through AOD activities. These three sets of results suggest that some students learnt about comprehension strategies during their involvement in the group discussion about the text and strategies through AODs.

The ultimate aim of teaching and scaffolding is to make students independent learners who are able to apply comprehension strategies in their own reading (Duffy, 2009; Fielding & Pearson, 1994; Irvan et al., 2007). Previous research suggests that teaching learners how to use, apply and administrate reading comprehension strategies is effective for promoting their understanding (Baumann, 1984; Duffy, 2009; Fielding & Pearson, 1994; Marin & Halpern, 2011; Prado & Plourde, 2011). The results of this research reveal that participation through AOD helps students to learn about various comprehension strategies and apply them with scaffolded support. This is consistent with the idea that the influential reading teacher should teach students how to use the reading skills and strategies (McLaughlin, 2012) and this could be achieved through AOD as well.

In summary, although there were no significant differences in the students' comprehension post-test scores between BL and FTF learning groups, students in the BL group displayed some evidence of applying reading comprehension strategies they had been taught and discussed in AOD. The fact that students started mastering and applying new reading comprehension strategies indicates that the group discussion approach used in AOD in this study may help students' learning about comprehension strategies.

### **10.3 The Potential of Blending AOD with FTF Classes to Support Students' Participation**

One of the major aims of this study was to investigate students' participation in AOD. This aim was addressed in question three of this research: how do students participate in AOD



about a reading from a set text? The patterns and quantity of students' posts were reported as measures of student participation rates. Exploring students' participation was important to determine the potential of integrating AOD into FTF classes to improve students' involvement and participation in reading classes. The learners' active participation and involvement in building knowledge and understanding is required for successful learning when adopting a constructivist stance, as learners should actively construct their own knowledge (McInerney & McInerney, 2010; Tracey & Morrow, 2006).

The findings of this study indicate that the students' participation increased over the 12 AODs. These results implied that AOD instruction supported students' participation. The evidence showing how the implementation of AODs increased students' participation in Arabic reading classes is discussed below.

Firstly, most students participated in each of the 12 AODs over six weeks. The content analysis showed that the average number of student contributors was 28 of 32 students per discussion. In addition, the number of students increased from 23 in the first discussion to 31 in discussion 12. Therefore, it is implied that group discussion activities used in the AOD encouraged most students to participate.

Secondly, the content analysis of students' discussion revealed the number of students' messages increased significantly from 28 messages in the first discussion to 47 messages in the final discussion of the experiment. This suggests that as the students grew used to the online environment they became more involved in learning activities. The third evidence is shown in students' interviews in which 11 out of 16 students (69%) stated that in the discussion about the text they were encouraged to participate in the AOD about reading comprehension. These results are similar to, and consistent with, previous research findings conducted in different contexts, which suggest that AOD support student participation (Black, 2005; Conklin, 2005; English, 2007; V. Jewell, 2005; Northrup, 2007; S. Yu, 2009).

Although, the findings of this study and other studies suggest that AOD helps increase learners' participation, and the number of messages could indicate the level of students' engagement in the discussion, it must be noted that the number of messages is not a sufficient and sophisticated measure of the quality of participation (Hara et al., 2000; Hillman, 1999). It is more important to assess the quality of these messages and how they contributed to the discussion overall as well as to levels of comprehension. This issue will be discussed later in this chapter.

Another conclusion derived from this study is that the application of AOD encouraged students' participation in FTF reading comprehension classes. As reported in the students' interviews, students' felt that their participation in AOD affected their participation in the FTF classroom setting, with the majority of interviewees (10 out of 16 students, 63%) perceiving an increase in their participation in FTF classes after their involvement in AOD. This was also validated by teachers' comments that the students' level of participation in FTF classrooms increased after being involved in AOD. In addition, teachers also reported that some shy students in the FTF classroom became more active in AOD. This finding supports previous studies, which suggest that participation in AOD supports and facilitates the students' participation in a FTF setting (Grisham & Wolsey, 2006; Jahnke, 2010; S. Yu, 2009). The contribution of AOD seemed to support students' learning about comprehension as they became more engaged in the class activities through the time spent discussing texts online.

It is important to discuss why students' participation rates increased in AOD as well as in the FTF classroom. One possible factor that could contribute to the increase in participation and number of messages in the AOD could be the teachers' support and encouragement. The teachers' discourse category analysis revealed that the teachers focused on thanking students for their participation in the discussion and for posting answers (83% of

discourse category). In addition, ten students (63% of interviewees) reported that teachers encouraged them to participate in the discussion and to answer the questions. Other factors mentioned by students that could have contributed to the increased participation in AOD were students' prior experiences of using social forums, family support, encouragement from teachers and peers, and having sufficient time – beyond the classroom limitations – to contribute in the discussion.

Another important point in this research finding is that students did not participate equally, as reflected by a comparison of the numbers of their posts. Some students posted more messages than others in the online discussion, *e.g.*, over the 12 online discussions ten students posted 10–12 messages, 18 students posted 13–16 messages, and four posted 17–20 messages. These results are in agreement with previous studies (Lipponen et al., 2003; Yeo & Quek, 2011) that suggest unequal rates of students' participation exist in online discussions.

There are various possible factors for variations in student participation rates. These factors may include the participants' prior technical skills, and the lack of immediate responses and encouragement they receive from others in the discussions (Hew et al., 2010). In the current study, a lack of response to students' posts could be one reason that limited the number of some students' messages. For example, five (31% of interviewees) students stated that their posts received no comment, which affected their motivation to post and participate. The students' familiarity with group members could be an important factor that influences individual participation rates (Cook, 2008; Pena-Shaff et al., 2005). Another possible reason for the variations in the number of messages between students could be the difficulty of understanding how to participate in the online forum. Five students (31% of interviewees) stated that they found it difficult to understand the instructions of participation in the online discussion. The results showing unequal participation observed in students' AOD imply that the teachers' responses and feedback to students' contributions and provision of clear and

explicit instructions on participation can be important factors that influence student participation rates.

#### **10.4 Students' Interaction in AOD**

The fourth question of this research (how do students interact with others in AOD about a reading from a set text?) was addressed by content analysis of students' interaction themes. This type of analysis was chosen in order to understand how students' interaction types could contribute to their comprehension and learning processes. As explained in the previous section, the number of students' messages increased over the duration of the experiment. Those results focused on the quantifiable aspects of the students' contributions and participation. Although the quantitative rates are a crucial indicator for active participation, the content, types and quality of this participation provide further in-depth understanding of students' learning and interaction with peers and provide evidence of sustained and interactive discussion. In this section the major findings from this study will be discussed in relation to existing literature that used both quantitative and qualitative content analyses to investigate online interactions (T. Anderson et al., 2001; Hara et al., 2000; Zhu, 1996).

The results suggested that, first, a large proportion of students' posts focused on the intended topic under discussion. Second, a large proportion of student interaction was focused on answering the teachers' questions. Third, although a large proportion of interactions could be classified as being student–teacher interactions, there were also interactions between students. These three findings are significant for understanding the overall content and quality of the students' contribution and how these types of interactions could contribute to students' comprehension and learning and are discussed further.

#### 10.4.1 Focus of students' discussion

One finding related to the type and content of discussion posts is that most students' posts focused on the topic under discussion. Lipponen et al (2003) reported the focus of class learning as 'on or off' topic is an indicator of the quality of the discourse. In this study 87% of student discussion focused on the topic that was prompted by the teachers' questions (*e.g.*, questions about the main idea of the texts). This finding implies that the participation in AOD and teacher questions helped students focus on the learning tasks. This result supports that of Lipponen et al., who found the majority (69%) of posts focused on the topic. These results are also in line with research that found online discussions were task- and content-focused (Hara et al., 2000; Schellens & Valacke, 2006). In the current study the proportion of students' on-topic discussion was much larger than in previous studies.

Further, an important question is why were students' posts focused on the topic? In order to answer this question, it is imperative to examine how the discussion was directed. Through analysis of the teachers' contribution to the discussions it was established that teachers initiated all AODs by asking questions focusing on specific topics and comprehension strategies. As reported in the content analysis of the teachers' contributions, all the students' discussions were teacher-initiated. This implies that teachers' questions and initial posts determined the students' discussion content as it helped students focus on comprehension strategies.

In addition, the teachers provided some criteria, participation and task structures, and guidelines of how to participate in the discussion, which as a result may have helped students to focus on the topic. The content analysis of teachers' AOD indicated that teachers posted 27 themes (21% of the total teachers' themes) focusing on organisation and design of students' participation, directing students to focus on the topic. In addition, most of the teachers' encouragement focused on thanking students for their participation and posting answers to the

question (23 themes, 50% of discourse facilitation themes). More evidence of the teacher contribution is that 10 students (63% of interviewees) reported that the teachers encouraged them to participate. Taken together these results imply that the teachers' involvement via prompt questions, guidelines, encouragement and setting required tasks were possible factors that helped students to engage and focus on the task.

#### **10.4.2 Student–teacher interaction type**

The most frequently observed student behaviour was answering teachers' questions about the three comprehension levels. The content analysis of students' AODs revealed 248 themes (48% of the total students themes) relating to students answering teacher questions. The content analysis revealed that the number of students who posted answers to all levels of comprehension questions increased from the first to the final discussion. Previous research suggests that answering teachers' questions is helpful for supporting students' comprehension (NICHHD, 2000) as it motivates learners to read, keeps students' thoughts focused on the specific aspects of topic and directs their thinking to the reading comprehension strategies (Searfoss & Readence, 1989).

To explain the large percentage of students answering questions in the AOD, it is useful to highlight possible contributing factors. The first factor could be the traditional FTF mode of learning in Arabic reading classes in this specific case, which generally takes place in the classroom environment and is predominantly teacher-centered, in which the teacher directs the learning activities and ask questions. One teacher stated that students tended to replicate what they experienced in FTF classes. The teachers described their roles in the FTF reading classes as applying the 'initiate-respond-evaluate' approach of questioning introduced by Sinclair and Coulthard (1975). In this pedagogic approach the teacher initiates questions, students respond, and the teacher evaluates the students' responses (Tierney & Readence, 2005).. This process was mirrored in the AOD. However, the restricted time of FTF classes

limited opportunities to apply small group discussion. In addition, online modes of learning had not previously been used. Fourteen students (88% of those interviewed) mentioned that online group discussion was a new experience and they had no experience using it for learning. Teachers also stated that they had not used online group discussion for teaching and learning and did not have adequate time to implement a group discussion approach in the FTF Arabic classes. Specifically, as teachers described the learning activities in FTF classes, students' roles were to passively receive information by listening to a teacher, reading the texts, asking few questions, and answering the teacher's questions. This indicates that students in FTF classrooms not only have few opportunities to initiate and direct the classroom learning activities, but also are not encouraged to engage in interactive discussion with others. That is, the main learning styles applied in FTF Arabic reading classes could have influenced how students interacted in the AOD. Therefore, as one teacher suggested, if teachers aim to achieve more effective online discussions it would be important to offer more opportunities to model and implement group discussion in the FTF Arabic reading classes and encourage students to discuss with others before implementing online discussion learning.

The second factor that may have contributed to the high rate of students answering teachers' questions could be the teachers' contribution in the AOD that included instructions, modelling, examples and encouragement. The significance of instructors' roles and support in moderating and managing students' interaction in online discussion is reported in previous studies (Goodyear et al., 2001; Grisham & Wolsey, 2006; Guan et al., 2006; Hobgood, 2007; Northrup, 2007; White, 2006; Zhang et al., 2007). Leadership (*e.g.*, teacher-led discussion) is one factor that affects student interaction patterns and the level of thinking during discussion (Gambrell, 1996b). The teacher's role in this study – to direct students to answer questions – was described in the interviews with teachers who perceived their roles as one of asking questions as well as encouraging students to participate by posting answers. This was

corroborated by the student interview data, when 10 students (63% of interviewees) reported that they received encouragement from teachers that focused on participation and answering questions. The transcript analysis also showed that teachers facilitated the online discussion by encouraging students to participate and post answers (38 themes, 83% of the teachers' discourse facilitation category). In addition, 59% of teachers' feedback focused on students' answers. The teachers' focus on directing students to answer the questions may be responsible for the large percentage of students answering teachers' questions (48% of the students' discussion).

The students' understanding of how to interact with others in the discussion could also explain the high proportion of discourse devoted to answering teachers' questions. However, of the 16 students interviewed, only six (38%) perceived their role in the AOD as solely to answer the teachers' questions, with the majority (10 students, 63%) perceiving their role as answering the teachers' questions as well as interacting with others. But with the exception of four students, those 10 students did not explain their understanding of interacting with others in AOD. Thus, students' lack of understanding of how to interact with others in an online context may be a possible factor that resulted in a large proportion of students only interacting by answering teachers' questions.

Another possible reason may be that students had more time to respond to the teachers' questions in the online context. The majority of students interviewed (12 students, 75%) reported that the time flexibility of AOD helped them to learn by allowing them to read more at their own pace and think carefully about their answers. Additionally, some students reported that they had more time to prepare their answers, edit their posts and read the text several times. Research has shown that students need more time to think about their responses and answers in order to generate more accurate responses (Searfoss & Readence, 1989). In this study, students were given 35 minutes during school time and three days out of school



time to contribute to the AOD. Providing students with more time to respond is reported in various research as one advantage of AOD for students' learning over FTF classes (Conklin, 2005; Larson, 2009; Northrup, 2007). These results could imply that AOD provided students with more opportunity and time to think and revise their answer to teachers' questions, which, according to teachers, is limited in the FTF classrooms due to the large number of students in each classroom and short time of the class (45 minutes).

Answering questions in an AOD could be useful for students' learning and comprehension, but it does not show if students were involved in deep and/or interactive discussions with their peers. Answering teacher questions is only a one-to-one interaction type, in which learners respond only to the teacher. In this study, the hierarchical student–teacher interactions represented 48% of student discussions, nearly half of the students' posts, which is a significant proportion. In addition, this one-to-one interaction may limit the opportunities of deep and meaningful negotiation about the text between students, a process which is known to be important for refining students' understanding of a text (McLaughlin, 2012). Online discussion provides a great opportunity to shift the learning from teacher–students (one-to-many interaction) to many-to-many communication and interaction (*e.g.*, students–students) (E. Murphy & Colema, 2004). In this research, there were occurrences of student–student interactions as will be discussed in the next section.

To provide a more effective and rich online learning environment, it is recommended by Angeli, Bonk and Hara (1998) that designers and practitioners should encourage learners' electronic interaction and debate. Therefore, in designing AOD about Arabic reading comprehension, the teachers' guidance to answer questions about a specific text and model comprehension strategies is important, as well as providing effective modelling of student–student interactions by showing how learners could respond to each other (Love, 2002).

Teachers need to model expected responses from students (English, 2007) in order to encourage them to engage in deep and meaningful discussion about the Arabic reading text.

### **10.4.3 Student–student interaction type**

Despite the fact that the content analysis of students' online discussion indicated that the proportion of student–teacher interaction themes equated to 48% of the discussion, the findings also outlined other interesting types of interaction between students. These forms of peer and social interaction included encouragement, scaffolding comprehension, agreement and disagreement, social cues, reflection, seeking support questions and starting discussion. These results are in line with previous studies conducted on different contexts that suggest online discussion supports peer interaction (English, 2007; Grisham & Wolsey, 2006; Larson, 2009; Northrup, 2007).

The value of peer interaction is underscored by social constructivist theory, as learners learn through social interaction with others (Tracey & Morrow, 2006; Vygotsky, 1978). Peer interaction and collaboration helps to create an environment of learning and teaching, which is integral to students' cognitive development and learning (Powell & Kalina, 2009). Therefore, from a social constructivist perspective, teachers should encourage and maximise the opportunities for interactions between students to achieve successful learning (Jarvis, 2005). This study has shown that the students' involvement in the group discussions through AOD supported some forms of social and peer interaction types, which are useful for students' learning.

Although learning through AOD was a new experience for students, close analysis of the discussion themes demonstrated that some students played central and active roles in these AODs, which could provide the stimulus for other students to interact. Their leadership was manifested in the encouragement, support and scaffolding they provided to others as well as in their initiation of discussion. Based on the constructivist perspective, active participation,

scaffolding and support are important for students' learning and cognitive development (Powell & Kalina, 2009; Tracey & Morrow, 2006).

Some students encouraged their peers in the AOD about reading comprehension strategies, scaffolded others in understanding the comprehension strategies and started new discussions. In contrast, others had the opportunity to seek for and support from others but were involved in social conversations that were not focused on the topic. These results suggest that some students were better at dealing with these new experiences than others. In-depth study of individuals would have allowed exploration of this point, which could be a focus of future research.

Overall, during the AOD students encouraged and scaffolded each other, sought support, socialised and, to a limited degree, discussed areas of agreement or disagreement with each other and reflected on their learning. The next paragraphs discuss and elaborate on students' interaction types observed in the current research.

#### ***10.4.3.1 Encouragement***

One of the findings regarding the interaction between students is that sometimes students encouraged others to participate in the AOD. The discourse content analysis showed that students posted 48 encouragement themes (representing 9% of the total themes in the discussion). Peer encouragement could be an important factor for increasing students' participation in the AOD. For example, five students (31% of interviewees) explicitly noted that they received support from their peers during AOD, which encouraged them to participate.

The emergence of this behaviour could be attributed to the teachers' role as moderator. The content analysis revealed the majority of the teachers' discourse category posts were to encourage students by thanking them (83% of the discourse facilitation category). This type of teacher behaviour and interaction (encouragement) may have been replicated by students in

their interaction with their peers. If this was the case, then the results may indicate that the teachers' behaviour and interaction types could be one factor that influences how students behave and interact in the online discussion.

The emergence of peer encouragement in this research to some extent mirrors previous research – albeit in different contexts – that suggests students scaffold and encourage each other in online discussion (Hara et al., 2000; Larson, 2009; Zhu, 1996). The occurrence of this type of student–student interaction (encouragement) could be a positive sign, which may indicate that some students who encouraged their peers adopt a student-centered learning approach by taking responsibility for their contribution to the facilitation and moderation processes, and being active in the learning process.

#### ***10.4.3.2 Scaffolding comprehension***

The content analysis revealed that some students adopted an active role in the discussion, which consisted of scaffolding and supporting others' understanding of comprehension strategies. Forty-six themes (9% of students' themes) were categorised as providing support to peers, which focused on their comprehension of the text. This finding shows a productive manner in which participation in online discussion could support students' reading comprehension and learning by making them active in constructing meaning and providing peer scaffolding for others. This exemplifies Vygotsky's ZPD and social constructivism, where students complete tasks via support and scaffolding from more capable peers (Vygotsky, 1978).

Students who scaffolded the comprehension of other students demonstrated three important kinds of participation. First, students not only interacted with teachers but also they interacted with their peers. Second, students were active contributors to the discussion as they began to facilitate others' understanding of comprehension strategies. Third, participants answered teachers' questions, but also explained, applied and administrated the

comprehension strategies to others and in the process showed that they are independent learners. This kind of interaction is important for developing students' comprehension from a metacognitive perspective (Haller et al., 1988; Schraw & Moshman, 1995; Tracey & Morrow, 2006). The occurrence of this type of interaction in the study is therefore taken to reflect students' awareness and understanding of the comprehension strategies.

Although, as reported in the content analysis, the interaction type '*scaffolding comprehension*' accounted for only 9% of the students' interaction themes, it is an important finding of this study as it may indicate that some students experienced active roles in their learning. That is, some students' played active roles in the discussion: initially by engaging regularly in the discussions and subsequently adopting a facilitator role as they scaffolded others' learning of comprehension strategies.

Various forms of scaffolding were used by students: posting explanations of the comprehension strategies (27 themes, 59% of the total of scaffolding strategies themes); providing feedback about peers' answers (11 themes, 24%); and referring peers to the students' forum guide (8 themes, 17%). By explaining the comprehension strategies and giving feedback about others' answers, students constructed their own understanding and knowledge as well as collaboratively supported others in doing so. This finding is in agreement with previous research conducted in different contexts that suggests participation in online discussion supports knowledge in a social constructivist fashion (Conklin, 2005; Grisham & Wolsey, 2006; Larson, 2009).

In this study, a contributing factor for the emergence of the '*scaffolding comprehension*' interaction type could be the instructions provided by the teachers, which included explicit instruction, modelling examples and explanations of comprehension strategies. Previous research emphasises the importance of explicit instruction, teacher support and modelling in students' reading comprehension (Andreassen & Bråten, 2011;

Duke & Pearson, 2002; NICHD, 2000; Tierney & Readence, 2005). Although the data shows the teacher support in this study was lacking in detailed information, instruction and practice about how to interact in online group discussions, it may still have impacted students' interaction. The evidence of the influence of teachers' instruction is manifest in the content analysis of students' themes in the AODs when some students referred to the teachers' modelling and examples. This is supported by 10 student interviews (63% of interviewees) who perceived the teacher's explanation and examples as a factor for facilitating their learning about comprehension strategies. Further proof of the teacher's influence on scaffolding comprehension behaviour could be that, as reported in the content analysis of students' discussion, some students repeated and used the teachers' examples and explanations of comprehension strategies in their posts.

In summary, the results for the scaffolding theme overall indicated that blending AOD with FTF discussion encouraged some students to support others' understanding of the comprehension strategies. The different types of scaffolding that occurred could also imply that the application of AOD supports students' learning and comprehension in various ways. First, as students scaffolded each other, they adopted more active roles in the learning process. The constructivist, interactive and transactional perspectives (P. Harris et al., 2006; Rosenblatt, 1994; Tracey & Morrow, 2006) view reading comprehension as active construction of knowledge in which the reader plays an active role. Second, social constructivist theory suggests learners need support and scaffolding from others in order to learn and complete their tasks (Irvan et al., 2007; Tracey & Morrow, 2006; Vygotsky, 1978). It can be implied from these results that instructions (group discussion and teachers' support) used in the AOD in this study may support students' comprehension by providing more opportunities for being active learners and receiving support from others.

#### 10.4.3.3 *Questions that started discussions*

Another interaction type adopted by some students in the discussions was posting questions that then had the potential to generate new theme-related discussions. Although this interaction type '*starting discussion questions*' represented only 5% of the students' discussion themes and was not frequently applied during the discussions forums, it could reflect that AOD may provide a learning environment that helps students to take an initiative in generating further discussions. Another noticeable finding is that 68% of the '*starting discussion question*' type received follow-up responses from their peers. In this type of interaction, learners exchanged and shared ideas and perspectives; thus, they were provided with more opportunities for learning.

However, why was the '*starting discussion question*' type not very frequent in the students' online discussion? The analysis of AOD provides two possible answers to this question. First, the absence of a response from a teacher that could have encouraged this type of interaction instead limited its use. Although the teacher asked students to post questions in the discussions, the content analysis of teachers' instructions revealed that teachers did not model, explain or detail how students should ask questions and, moreover, did not encourage such behaviour during the discussions. Second, teachers mentioned in the interviews that students tended to replicate what they experienced in FTF classes. Therefore, the nature of the interactions in FTF practices – in which teachers dominated and initiated the activities with limited opportunities for students to raise questions and discuss with others – may have influenced students' behaviour in AOD.

Previous research suggests that encouraging students to generate questions about a text is beneficial for their comprehension (Dole et al., 1991; King, 1992; Palincsar & Brown, 1984; Rosenshine et al., 1996; Yeh & Lai, 2012). The results of this study imply that students did not receive preparation or instruction on how to generate questions, which is important for

achieving positive effects (André & Anderson, 1978; Wong, 1985). Therefore, it is important that teachers should direct and teach students to generate questions about a reading (Searfoss & Readence, 1989). In summary, it would be valuable for providing effective BL designs and specifically instructions used through AOD, as well as facilitating and generating knowledge, for the teacher to encourage students to question each other's understanding (Tam, 2000).

#### ***10.4.3.4 Questions seeking support***

The analysis of students' AOD themes revealed that some students asked questions to seek support (8% of the total students' themes in the AOD). This result implies that AOD could provide a supportive learning environment in which students ask for support and clarification to solve any difficulties they may face; also, student interview data showed they appreciated being able to do this at the time, and place, when their questions arise. As noted, according to the principles of the ZPD suggested by social constructivist theory, when learners need support they benefit from scaffolding from more capable individuals to complete their tasks and learn (Ormrod, 2011; Vygotsky, 1978). A further analysis of these themes from the data indicated that the majority of questions seeking support were directed at seeking clarification and further examples of comprehension strategies. It is noticeable that students sought support for inferential and evaluative comprehension levels more often than for literal, which may indicate that these levels were more challenging to students. Although the occurrence of seeking support questions was low, the existence of this type of question suggests that the learning design involving a combination of AOD and FTF gave students the opportunity to share learning difficulties. As the ability to clarify, seek support and scaffold is important for students' learning (Powell & Kalina, 2009), it is encouraging to see that this kind of questioning emerged in the data. In addition, as the generation of questions can contribute to supporting student comprehension and learning (Dole et al., 1991; Irvan et al.,



2007; Searfoss & Readence, 1989), the students' activity demonstrates that the learning design aligns with this goal.

#### ***10.4.3.5 Social cues***

In AOD, social themes were the second most frequently posted by students and accounted for 13% of students' themes. These social cues focused on greeting others, expressing feelings and sharing personal life events and were posted mostly during the evaluative and inferential comprehension weeks. The '*social cues*' presented in the AOD may be an indicator of the degree of comfort and familiarity between students, insofar that they shared their own life experiences. Familiarity with others in an online setting encourages participants to be less formal in their posting and share personal information, thus enhancing interaction (Tu & McIsaac, 2002).

The social theme posts may be due to two contextual factors. First, students knew each other because they attended the same school and were in the same classes. Second, students' prior experience in participating in social forums may have influenced their comfort with sharing personal information. The difficulty of the comprehension level being studied may have also influenced the amount of social cues. As established in this study, the discussion about evaluative and inferential comprehension levels attracted a higher average of social themes compared with that of the literal comprehension level. The reason behind that could be that these levels are more difficult, causing students to talk to each other more, indicating their need for social support from others.

Social talk or 'cues' were reported in previous research and considered as useful for supporting online interaction and overcoming the challenges of collaborative learning (Chen & Wang, 2009). These social markers support active participation in discourse, as well as build a sense of community (Lipponen et al., 2003). However, moderators should monitor students' use of off-task posts, making sure they do not distract their focus from the main task

of the activities. In summary, the findings of this study imply that application of AOD in the Arabic context supports the occurrence of social talk between students.

#### ***10.4.3.6 Least frequent types of interactions***

It is important here to mention that, of the interaction types, the least represented types were agreement/disagreement and reflection. The main implication of these findings is that although some students had opportunities to agree/disagree and reflect on their learning, these types of interaction were infrequent.

##### ***10.4.3.6.1 Agreement/disagreement***

During AOD students may challenge and evaluate others' ideas, as well as create their own opinions and judgment. Therefore, it is important for teachers to encourage this behaviour as it could indicate a higher level of cognitive engagement (Hara et al., 2000). However, this type of interaction was limited in the AOD in this study, representing only 4% of the total student discussion themes; furthermore, of these 4%, only three disagreement themes were posted. The low level of disagreement posts could be attributed to the lack of encouragement from the teachers to critique peers' contributions. The results of this study are consistent with Cook's (2008) study findings that suggest students tend to agree with each other rather than disagree in online discussions but in contrast with other studies that found students prefer to disagree with each other (Northrup, 2007; Pena-Shaff et al., 2005). The students in this study did not argue and discuss each other's opinions and contributions. It appeared that the instructions used in AOD activities did not encourage these agreement/disagreement behaviours nor did it encourage students to criticise and judge others' contributions.

The agreement/disagreement discussion type could be an indicator of social construction of knowledge. In this study, students' responses to others' posts may indicate that they are building their views and thoughts about others' ideas and, as a result, involving

in a dialogic process. Unfortunately, the continued dialogical process between students did not go beyond replying to others' posts. Students, for example, did not tend to defend their opinions or ideas when others disagreed with them. This type of short dialogical process was also observed in previous research (Pena-Shaff & Nicholls, 2004). The results of this study may imply that to provide more interactive and effective learning activities, designers and moderators of learning activities – be they in AOD or FTF settings – should consider encouraging these sorts of behaviours, in which students are required to agree, disagree, build on each other's ideas and defend their opinion.

#### *10.4.3.6.2 Reflection*

The least observed interaction type in the discussions was reflection, constituting only 3% of total students' discussion themes. Students showed how the involvement in group discussions activities through AOD and the interaction process influenced their learning by explaining the benefits of participating in this discussion on their understanding of the topic. Reflection is useful for students as it helps them to understand their own learning processes as they develop. It is also useful for teachers to discover the effectiveness of their online teaching approach as seen through the eyes of their students. Although the reflection theme was not common, it can reveal how effective the online discussion was. Students who reflected provided valuable insight into their learning strategies. First, students showed awareness of their understanding of comprehension strategies, posting seven themes (47% of students' reflection themes) describing how the discussion helped their understanding of the text. Second, students became aware that media could be used to facilitate learning as well as to play games, posting five themes (33%) reflecting on the usefulness of the online learning form on their learning process. Third, a few students showed how the learning and teaching methods (online group discussion) facilitated their learning in reading classes, posting three themes (20%). The few instances of '*reflection*' themes show that the discussion provided

them with opportunity to reflect, monitor and raise awareness of their own learning and comprehension processes. Students' meta-awareness of their learning and comprehension strategies is an important supportive factor (Haller et al., 1988; Schraw & Moshman, 1995). Encouraging students to reflect on and self-monitor their learning and understanding is useful for them to become independent learners (Irvan et al., 2007). Considering that this type of interaction '*reflection*' is useful for learning and comprehension in general, the implementation of this online group discussion design provides a good opportunity for teachers to encourage reflection in all forms of teaching practice, including FTF teaching. The process of reflection engages students in knowledge construction and meaning making, which is important for learning to occur (Jonassen, Davidson, Collins, Campbell, & Haag, 1995; Pena-Shaff & Nicholls, 2004). In this form students need to articulate their own views and meaning about what they have learned in a learning environment. This sort of behaviour should also be encouraged by teachers, and instructional designers in order to create a constructivist environment for learning.

### **10.5 Students' and Teachers' Perceptions**

This section discusses the findings that are related to the sixth and seventh questions in this study of teaching in Arabic reading classes that addressed students' and teachers' perceptions of the usefulness and challenges of blending AOD with FTF reading classes. The perceived factors that encouraged students to learn and engage effectively in AOD are explored through examining the benefits that this design adds to the current didactic practice of teaching and learning in Arabic reading classes. Possible changes in teaching and learning in this specific context are also discussed, as well as the limitations and challenges that hinder the effective application of blended design. These discussions are important as they provide guidelines and practical implications from the students' and teachers' perspectives that could help teachers and policy makers decide how to design and incorporate AOD activities into

FTF reading classes effectively in the Saudi Arabian context in order to support teaching and learning reading comprehension.

This discussion, therefore, focuses on five aspects of students' and teachers' perceptions related to teaching and learning Arabic reading: (a) the overall students' and teachers' perceptions of the usefulness of using AOD to support reading classes; (b) perceived encouraging factors; (c) perceived discouraging factors and challenges; (d) perceived advantages for teaching; and (e) perceived challenges for teaching.

### **10.5.1 Students' and teachers' overall perceptions**

The first major finding related to the students' and teachers' perceptions of using AOD is the perceived usefulness of this type of learning for students' participation and learning in Arabic reading classes. As reported in the results of interviews, students perceived using AOD with FTF classes to be useful, with the majority (11 students, 69% of those interviewed) reporting a positive attitude toward the use of AOD and its overall effects on their participation. These results corroborate the findings of previous research that found students perceived AOD as useful for their participation and contribution to discussions (Brown, 2002; Conklin, 2005). The main reason mentioned by some students in this study for this positive attitude was that AOD gave them the opportunity to participate. This reason was also reported in previous research as one advantage of incorporating AOD into instructional designs (Conklin, 2005; V. Jewell, 2005).

Both students and teachers also confirmed previous findings about the positive perception of using this kind of AOD activity. The results of the interviews suggested that integrating AOD into FTF classes was useful for promoting students' participation in both FTF classrooms and AOD. Ten of the 16 students who were interviewed (63%) perceived their participation increased in FTF classes after being involved in AOD. Some students explained that they felt more comfortable to participate in FTF class activities than before

their online experience. The teachers supported these results, noting in interviews that some students who did not participate in FTF classes, or were shy, participated and voiced their opinions in the online group discussion. In addition, teachers mentioned that after participating in AOD, some students in FTF classes asked more questions than before. It can be extrapolated from the results of the interviews that students and teachers perceived the supplementary integration of AOD with FTF learning as useful for increasing students' participation and involvement in the discussion about the reading tasks.

In terms of the perceptions about the usefulness of this design for supporting students' learning, findings revealed that most students (12 students, 75%) perceived AOD as useful for promoting understanding of the reading tasks. Students explained how participation in the online group discussion assisted their learning. First, as students mentioned, it helped them to answer teachers' questions about the texts. Second, it helped them to learn and understand the comprehension strategies. More specifically, seven students (44%) stated that they learned about inferring main ideas, sub-ideas and drawing conclusions through their participation in online discussion. These findings confirm the results of previous research that concluded not only do students have a positive attitude towards online discussion in general but also towards the benefits it brings to their learning and thinking (Brown, 2002; Cheong & Cheung, 2008; Conklin, 2005; Hobgood, 2007; S. Yu, 2009).

The Arabic teachers also supported the usefulness of applying this design in developing students' comprehension. As the results of teacher interviews revealed, teachers perceived that involvement in AOD is useful for students' learning and comprehension. As the teachers stated, this usefulness was evident in the change of the quality and types of students' questions posed in the FTF classroom after their involvement in online discussion. Teachers noticed that some students moved from formulating basics questions (at the literal comprehension level) to questions that required higher levels of thinking (inferential and

evaluative comprehension). These types of questions may have reflected the students' thinking and awareness of comprehension strategies rather than the content of the text. For example, the Arabic teacher mentioned that some students asked how to find the main idea and how to find supporting evidence during the FTF class after participating in AOD. Encouraging students to learn, think, and be aware about learning and comprehension strategies is important for their learning and comprehension (Dole et al., 1991; Duke & Pearson, 2002; Pintrich, 2002; Tracey & Morrow, 2006).

In regards to students' perceptions about the enjoyment of learning through AOD, the majority of students (10 of the 16 interviewed, 63%) expressed that learning with AOD was an enjoyable experience. This finding is consistent with previous research that reported online discussion provides students with enjoyable experiences (Boehning, 2008; Hobgood, 2007; Pena-Shaff et al., 2005; White, 2006; S. Yu, 2009). Although the majority of students found this experience enjoyable, six (38%) students did not. As they mentioned, some of reasons for their negative attitude was related to the negative attitude toward the subjects and lack of responses to their posts.

In summary, students' and teachers believe integration of AOD activities into FTF classes to be useful for their participation and learning as well as making learning enjoyable in Arabic reading classes. A more detailed explanation for the possible encouraging and contributing factors and explanation of these positive attitudes toward AOD is provided below. In addition, the section below discusses the perceived challenges and discouraging factors that may explain the negative perceptions toward this type of learning.

### **10.5.2 Encouraging and contributing factors**

Students mentioned several reasons as to what encouraged them to participate in, learn from and enjoy the AOD. The encouraging factors are an important outcome and contribution of this research regarding the application of AOD in teaching Arabic reading. These benefits

and encouraging factors that support and help student to participate, learn and enjoy the learning process are discussed in the following sections and include provision of: (a) teacher scaffolding and support; (b) an enjoyable learning experience through using the Internet and computers; (c) the opportunity to learn through group work and to learn from peers; (d) adequate time for reading the text several times; and (e) flexible time for participation in the discussion.

Regarding teacher supports, in the interviews, 10 students (63% of the interviewees) perceived that the teachers' examples and explanations of comprehension strategies helped their comprehensions of the text. Also, the teachers' support encouraged students to participate in the AOD. These teacher supports and encouragement had a positive influence on students' general perception of the use of AOD on both their participation and comprehension. These findings confirmed the results of previous research that found instructors' contribution in online discussion effects students' attitudes toward online discussion (Zhang et al., 2007). Although the teachers in this study had not previously applied AOD in their teaching, it still impacted students' perceptions and attitudes. The results from the study confirm previous literature and experts opinion (NICHHD, 2000; Pressley, 1998; Tierney & Readence, 2005) that the provision of scaffolding, explanation and examples of comprehension strategies are effective approaches in supporting students' comprehension.

Students also mentioned that they enjoyed using the Internet and technology to participate in AOD (7 students, 44%). The incorporation of this type of online tool and design created an enjoyable learning environment. This suggests that the use of communication technology in teaching and learning more broadly may help make the learning experience enjoyable and fun. This finding is similar to Bohning's (2008) study that suggested students' use of technology is one reason for which the learning experience is enjoyable. Although, previous research (Black, 2005; Zhang et al., 2007) points out that the design of learning



activities is more important than the technology itself, this study's results imply that the types of technology used could bring about some benefits to learning by making it more enjoyable.

Being part of a team and learning from others also helped some students to enjoy the online experience. Although most students had not experienced working as a team for learning before – either in person or online – the interview results showed that five students (31% of interviewees) perceived the experience of group work as enjoyable. Students' appreciation of working as part of team is an interesting finding of this research. One possible explanation of this positive attitude toward teamwork could be the familiarity with their peers. In this study's reading context, this result suggests that the implementation of these AOD activities provided the opportunity for students to be involved in a new learning style (online group discussion), which they had not experienced before.

Reading peers' posts was reported to be one of the factors that facilitated students learning. As seen in the interview results the majority of students (13, 81% of interviewees) perceived reading others' posts was another contributing factor for helping them to learn in the reading classes. Reading others' posts and answers provided them with a range of opportunities for sharing various ideas, answers and information, thus helping them to understand the topic. Teachers corroborated these findings. For example, one teacher mentioned in his interview that students had a chance to learn from each other and were able to find various examples and answers, which helped them understand the text more.

The findings in this study about the usefulness of reading peers' posts are similar to those of previous studies, which agree on the idea that the major contributions of online discussions are offering opportunities for learning from peers, sharing information and exchanging ideas (Conklin, 2005; Northrup, 2007), hearing other's opinions and ideas (Brown, 2002), and building knowledge by exploring texts from different perspectives (Grisham & Wolsey, 2006). Sharing ideas supports the social construction of knowledge in

which learners share knowledge and benefit from each other (Conklin, 2005). The findings in this study contribute to the proposal that the use of a BL design involving AOD offers an opportunity for students' to be exposed to others' ideas from which they benefit. In addition in this learning context the online discussion experience offered the Saudi Arabian students a collaborative construction of knowledge.

Students perceived motivation for repeated reading as another benefit of learning through AOD. Some students reported in the interview that participating in AOD encouraged them to read the text several times before posting their answers. Teachers also supported this finding, with one teacher mentioning that students had a chance to read the text several times in order to answer the questions. This is an important finding on the contribution of AOD to students' comprehension. Reading and comprehension becomes better with more reading practice (Pardo, 2004; Pressley, 2003). As can be understood from the process that some students followed before answering the question or posting to the discussion, one explanation of motivation to read may be that students wanted to feel prepared, creating, then editing their answers to make sure they were correct. Another possible explanation for students' motivation to read the texts several times could be their awareness that their posting would be read and accessible to teachers and the peers, and retrievable for the duration of the course. Ten students (63% of interviewees) reported that after they posted their answers they checked if teachers had commented on their post, and six students (38%) checked if their peers commented. These results indicate that the application of AOD activities encourages students to read set texts several times and prepare their posts carefully, which in turn supports their understanding of the text.

Flexibility was perceived by students as one of the benefits of AOD that could contribute to their learning in reading classes. As reported by the majority of students in the interview (12 students, 75%), flexibility of AOD and having a chance to ask questions at any

time was perceived as a contributing factor that assisted students in their learning. Students mentioned in interviews that time flexibility helped them prepare their posts, as it provided them an opportunity to prepare, edit and revise their answers carefully before submission. Seven students (44%) stated that this flexibility minimised the restrictions that are common in the FTF classes, for instance, the students' participation time constraints and large number of students in FTF classroom. According to students the AOD gave them opportunities to post their enquiries and questions at any time and voice their opinions.

The results of this research regarding the flexibility of AOD supports previous research findings that flexibility provides students with the chance to learn and participate at any time and from anywhere (Conklin, 2005; Hew & Cheung, 2003b; V. Jewell, 2005; Tiene, 2000; S. Yu, 2009), and allows more time for reflection and preparation of thoughtful responses (Black, 2005; Jahnke, 2010; Pena-Shaff et al., 2005). Allocating sufficient time for students to prepare their posts carefully gives all students an equal opportunity to share their perspectives about the reading (Larson, 2009) and contribute to their understanding and comprehension of the texts (Fielding & Pearson, 1994; McCormack & Pasquarelli, 2009). Therefore, providing flexible and sufficient time for students' participation in the discussion is a significant feature and benefit of integrating AOD into Arabic reading classes. This benefit of time flexibility contributes to the current practice of teaching Arabic language by extending the time of learning beyond the FTF classroom.

### **10.5.3 Challenges, discouraging and hindering factors**

Although most students reported positive attitudes toward AOD some manifested negative attitudes toward this online learning mode. In the following section, the possible factors and challenges that may have caused these negative attitudes and discouraged students' participation are discussed. The discussion of these challenges is important to

understand how this design can be implemented effectively in Arabic reading classes in Saudi Arabia.

A lack of experience in online social networking was one challenge perceived by students who did not find AOD useful (five students, 31%). However, seven students (44%) who had prior experience perceived their involvement in this study as helpful. Prior experience seems to be a critical factor that affected students' attitudes towards online learning. In a previous study, conducted by Cheong and Cheung (2008) the lack of experience in using online discussion was considered a challenge and resulted in the lack of students' critical thinking. Therefore, it can be deduced that prior experiences of online forums (social or learning) may influence the students' perceptions toward the application of this design in Arabic reading classes.

Students also reported unclear instructions as another challenge. Student interview data showed limited participation may have been caused by a lack of detailed guidance from teachers, that is, not giving detailed and explicit instructions on how to discuss and interact with others as well as expected length of messages. In this regard, previous literature suggests that clear instructions, expectations and guidelines should be provided for facilitating effective participation in online discussion. In this study, five students (31%) stated that they did not understand the instructions on how to participate and post in the online discussion forum. In addition, 10 students (63%) reported the difficulty of understanding the dynamics of group discussion and interaction with peers. This is because of that this learning method (online group discussion) was new to the majority of students. These results align with previous research findings that showed not knowing what to contribute is a factor that limits participation in online discussion (Hew et al., 2010); further, a lack of clear guidelines and instructions may contribute to poor quality posts (Cheong & Cheung, 2008). The difficulty of understanding how to discuss and interact during the AOD could be attributed to the limited

opportunities for group discussion in the FTF classroom learning. Clear and sufficient instructions are therefore critical in order to support students' participation as they learn to use a new learning style in reading classes.

Interestingly, some students in this study requested graded participation. As stated in the methodology chapter, the participation in this AOD was not marked or graded. Nine students (56%) felt that their participation in AOD should have been graded to encourage students' participation. One possible explanation for this finding is that some students need more incentive to participate in an AOD. This contrasts with findings from previous research at a graduate level, which established that required or forced participation may affect the quality of the posts and discussion as it leads students to focus only on meeting course requirements and consequently feel under pressure to participate (E. Murphy & Colema, 2004). The results in this study suggest that giving marks and grades for secondary school students in an Arabic reading context could motivate students to involve themselves more in discussion about reading. This might be due to the learning styles in the FTF reading classes in which the teacher assesses students' reading abilities and the different maturity level of secondary versus tertiary students.

Attitude toward the subject was mentioned in this study as another discouraging factor for participation. Students' attitudes toward the set texts may have resulted in negative perceptions toward the use of AOD on participation. Four students interviewed (25% of the interviewees) who did not perceive AOD as useful for their participation had a negative attitude toward the set texts, which may have negatively influenced their willingness to contribute to the discussion. However, after the students' involvement in AOD, four students (25% of interviewees) became more interested in the reading subject. This change in attitude was also demonstrated by the students' behaviour, reading the texts several times at home. Six students (38%) reported that after using AOD, they would read the texts several times to

find the best answers to the teachers' questions. In addition, eight students (50%) stated that they spent more time learning at home compared with the period before using the AOD.

Although this study did not focus on the factors that contribute to students' negative attitudes toward reading, previous research shows that the type of classroom learning culture is a contributing factor (*e.g.*, having an opportunity to interact socially with others) that influences students' motivation toward reading (Gambrell, 1996a). Students' experiences in traditional FTF learning – in which the teacher is the center of learning – could have a direct influence on students' motivation toward reading and to a certain extent on their participation on AOD.

The lack of immediate responses or feedback was one of challenges faced by some students in these AODs. The results of this study showed that the lack of immediate response or feedback negatively influenced students' perceptions' toward the usefulness of AOD in their participation. Five students (31% of interviewees) attributed their low participation and unwillingness to post to the lack of immediate responses, or even no responses, from teachers or peers. This situation not only affected their participation but it also affected their feeling of enjoyment, which sometimes resulted in frustration. Five students (31% of interviewees) reported not enjoying online discussion and attributed this negative feeling to not receiving a response to their post. Some students perceived that the teachers' feedback was not expeditious, suggesting immediacy is important in facilitating students' participation in online discussion. Previous research supports the notion that a lack of responses or feedback has negative effects on students' participation and enjoyment in online learning (Hew & Cheung, 2003a; Hew et al., 2010; Pena-Shaff et al., 2005; Wang & Woo, 2007), and the immediacy of instructor behaviour has a significant impact on students' motivation and learning (Hobgood, 2007).

Based on this discussion of findings, the design of AOD activities that support FTF reading classes should include instructions that provide adequate and timely feedback to students' contributions and to encourage them to respond to their peers. This study suggests that the delayed responses and feedback is one of the important challenges that limited the effectiveness of the application of this design in the Arabic reading context. Although teachers were provided with some instructions and support from the researcher about the importance of giving feedback, teachers mentioned that the time and workload limitations affected their ability to be effectively involved.

Seven students in this study (44% of interviewees) felt isolation is a challenge that students face when involved in AOD. In this regard this study agrees with prior research that a feeling of isolation is a recurrent problem in online forms of learning (Conklin, 2005; Krebs, 2004; Williams et al., 2001). There are some possible reasons that emerged from the current study to explain this problem. Firstly, students felt this was attributable to the lack of immediate responses as well as the lack of physical presence of participants and facial expressions. Secondly, a lack of online learning experience meant it was difficult for students to compensate for the physical absence of the teachers and peers. This factor is implied from three students' interviews that showed their feeling of isolation and preference for FTF learning. One of them mentioned, "I prefer FTF classes because I can see others, talk to them and receive immediate responses". Therefore the application of AOD to support FTF reading classes in this specific context poses a problem regarding feelings of isolation. However, this may be not a major challenge as this BL design combined both FTF and AOD modes of learning. In addition, neither mode alone (FTF or AOD) will suit all learners. Thus, application of BL could encompass many different individual learning styles.

Workload was another obstruction when engaging in AOD activities, for both students and teachers. Nine students (56% of interviewees) felt challenged by a heavy school

workload, which included online learning. In addition to participating in AODs, they had to do homework for other school subjects. As noted by various researchers in different contexts the problem of workload may be caused by the difficulty of keeping up to date with the discussion (Conklin, 2005; Hew et al., 2010; White, 2006). This problem also existed in the implementation of this design in an Arabic reading context.

Previous studies, albeit conducted in different contexts, suggested that this challenge may be caused by: flexibility of participation in terms of number of posts, as some students can participate as much as they want and may participate too much (Conklin, 2005; Hew et al., 2010); the fact that large groups may generate many messages (Wu & Hiltz, 2004); posting long messages; and, lastly, the pressure of keeping up with others' participation rates (E. Murphy & Colema, 2004).

The Arabic reading teachers also perceived this problem of heavy workload as a challenge that they faced when moderating AOD. The results of this research about this problem suggest that the workload of both students and teachers is a significant challenge that could limit the success of this design in supporting teaching and learning of Arabic reading comprehension, just as it impacted students' contributions in other contexts.

#### **10.5.4 Advantages of AOD for teaching**

The first benefit that AOD provides to teaching practices is that through the reading of students' posts, teachers have the opportunity to assess their learning and understanding of the texts. As perceived by teachers in the interviews, this is one of the main advantages of applying AOD in teaching practices. It assists teachers in monitoring students' thinking and understanding their needs. It provides additional tools for assessing students' skills and learning. One role of an influential and supportive reading teacher is to understand students' needs and strengths through assessment (McLaughlin, 2012), which can be effectively done through AOD. The finding from this study, drawn from teachers' interviews, suggests that by



the application of such AOD activities, teachers have a new opportunity to assess students' understanding of the topic and determine their needs in Arabic reading classes.

The teachers' interviews also showed that AOD provided teachers with development of their skills in the application of group discussion methods as well as in the moderation of online learning interactions. First, teachers perceived that AOD provided them with a great opportunity to introduce group work, a practice that is often difficult to adopt in traditional classes because of time constraints. Second, teachers perceived that their involvement in the design and moderation of the AOD enabled them to learn more about the use of technology in teaching. These two benefits could contribute to the teachers' expertise and knowledge as they adapt to new teaching roles. The significant change in instructors' roles from FTF to online learning – that is, where instructors need to learn how to engage, facilitate and interact rather than only being information providers or lecturers – was highlighted by Harasim (2000). Similarly, the two teachers in this study felt that their roles in online discussion changed to be facilitators more than only information providers.

#### **10.5.5 Challenges of applying AOD to teaching**

As well as benefits, the application of a new mode of learning that entailed changes in teachers' roles generated some challenges. This was anticipated, as it was the first time the teachers had applied and moderated AOD methods. As the teachers reported in interviews, their new commitment exacerbated their already heavy teaching workload, thus making their work more challenging.

The main source of difficulty in applying the AOD approach in this study was the lack of teachers' expertise in this mode of online teaching. Both teachers mentioned that they had not used online discussion for teaching before and did not have adequate knowledge to implement it successfully. They reported that the current practice of teaching Arabic reading does not incorporate interactive tools of learning, such as AOD.

A challenging lack of teachers' knowledge and skills to moderate online interaction has also been reported in previous research in different contexts (Conklin, 2005; English, 2007; Krebs, 2004; Love, 2002; Williams et al., 2001). Likewise, according to Anderson, Rourke, Garrison and Archer (2001) a lack of teacher expertise affects teachers' rates of posting, content and contribution. Harasim (2000) reported that an increased workload is a major concern for teachers, particularly at the initial application of online teaching; this concern, however, decreases as teachers gain more experience. In the Saudi context, Al-sultan's (2000) study found similar results in which teachers faced some challenges in teaching online due to their lack of technological skills and knowledge on how to teach in an online learning environment. Although the Ministry of Education in Saudi Arabia introduced various online programs in education sectors, since the Al-Sultan study (2000) it seems that not much has changed regarding the incorporation of online learning tools in Arabic reading classes. The current study suggests the need for more professional development preparation for teachers to deal with these teaching tools and methods.

In addition, the influence of FTF teaching style in Arabic reading classes when teaching online must be addressed. Of all the aspects of FTF learning and teaching in these two Arabic reading classes that may have had an effect on online teaching, teacher-centered learning, limited opportunities for interaction between students, and the lack of use of online tools for teaching and learning are the most significant.

In light of this research and previous studies findings, it can be inferred that the transition from the traditional form of learning to more interactive online learning poses some challenges for teachers, as it requires more time, training and preparation to build expertise than the current study allowed and provided. This view is supported by various authors and researchers who suggest that online teaching and learning is different from traditional modes of teaching and learning and requires changes in teachers' roles, responsibilities and

competencies (Andresen, 2009; Coppola et al., 2001; Goodyear et al., 2001). The results of this study suggest that the instructors' knowledge and experience of online pedagogy as well as the current FTF pedagogy are major challenges to achieving successful implementation of this type of BL.

## **10.6 Summary of the Discussion**

This chapter discussed and interpreted the major findings related to the research questions. It discussed some main issues including the insignificant effect of AOD on students' reading comprehension compared with FTF, the observed improvement within groups, the potentials of blending AOD with FTF learning on students' participation, issues related to students' interaction types, and teachers' and students' perceptions of usefulness and challenges of using a BL approach. Detailed discussions about the major factors that resulted in insignificant quantitative results, increased participation, frequent occurrence of some types of interaction and limited application of other factors were included. These discussions were related to existing literature and theories in the field. Through this chapter, some implications were provided focusing on how the use of AOD could contribute to the current practice of teaching in Saudi Arabia as well as to students' comprehension and learning processes. More detailed implications will be discussed in the next chapter.

In summary, although BL did not result in significant improvement in comprehension levels, if designed well and carefully it has the potential to bring about benefits for students' learning in reading classes, changing students' and teachers' roles, creating a constructivist learning environment and helping to solve some limitations found in typical FTF classes. As in previous studies, this study indicated that the type of learning in Saudi Arabia poses some difficulties and challenges that need to be solved for creating effective BL designs. This discussion implies that greater attention should be given to instructor roles, moderating in-depth and continued dialogical discussions and designing an effective online discussion

activity. The next chapter provides implications and recommendations that could help in achieving these aims.

## **CHAPTER ELEVEN**

### **CONCLUSIONS AND RECOMMENDATIONS**

This chapter focuses on the major conclusions, implications and recommendations drawn from the current study. This chapter is divided into five sections. The first section restates the research aims and questions and summarises the major empirical findings of the study. The second section provides some implications and recommendations that can be drawn from these empirical findings. The third section highlights the limitations of this research. In the fourth section, the contribution of this research is highlighted. The last section of the chapter presents the overall conclusion and final remarks.

#### **11.1 Research Aims, Questions and Empirical Findings**

This study explored the effects of blending AOD with FTF reading classes on students' comprehension. The study also investigated how students participated, interacted and discussed a set reading in AOD. Another focus of investigation was to establish how teachers facilitate students' learning and interaction in AOD. Finally, for the purpose of obtaining a deep and comprehensive understanding of teachers' and students' experience of using AOD, their perceptions of using AOD in reading classes were explored. In order to achieve these aims, the researcher applied a mixed methods approach that included quantitative and qualitative methods.

Seven research questions were addressed. These questions and a brief summary of each the results pertinent to each question are provided as follows.

***1. Do students who participate in AOD as a supplement to FTF learning perform better on reading comprehension tests compared with students who engage only in FTF learning?***

The results of comparison between both groups in the study showed that although the BL group's post-test scores were higher than the control group's, the differences were insignificant for the overall, literal, inferential or evaluative comprehension scores. These results indicate that the instructions used in BL did not result in significant improvement in students' comprehension scores compared with FTF learning. From these results it can be concluded that blending AOD with FTF learning was not more effective than FTF learning.

***2. Do students in each group (FTF and BL) demonstrate significant improvement in their reading comprehension scores from pre-test to post-test?***

The results of comparison within groups showed that students who participated in BL demonstrated a significant improvement from pre-test to post-test scores for overall comprehension and all three comprehension sub-levels. However, those who participated in FTF learning demonstrated significant improvement from pre- to post-test only in overall and literal comprehension scores.

***3. How do students participate in AOD about a reading from a set text?***

In terms of the students' participation, as the discussion progressed, the number of participants in the AOD increased from the first discussion to the last discussion as well as the number of messages posted. It was revealed also that, although the majority of students participated in the discussions, their participation rates were not equal as some students' posted more messages than others. These results indicate that application of AOD gave students the opportunity to participate in the discussions.

**4. *How do students interact with others in AOD about a reading from a set text?***

Students' discussion focused predominately on the topic and reading comprehension strategies. In relation to discussion interaction types, the majority of the students' discussion focused on responding to teachers' questions. This study provides some indicators of peer interaction and support, application of comprehension strategies and participation in AOD. The most frequently observed interaction behaviours were answering teacher questions, encouragement, scaffolding comprehension strategies, questions seeking support and social cues. In contrast, questions that started discussions, agreement and disagreement, and reflection were the least frequent interactions patterns demonstrated by students during AOD.

**5. *How do teachers facilitate students' comprehension during AOD about a reading from a set text?***

Teachers participated in the AOD by providing direct instruction, facilitating and organising the discussion. However, teachers focused on direct instruction and encouraging students to post and answer the questions more than on the design and organisation aspects of moderating an online discussion, nor did they encourage sustained and interactive discussion. Teachers used various methods to provide direct instruction, including: posting questions to initiate discussion; providing explicit explanations, models and examples of comprehension strategies; clarifying students' misconceptions of these strategies; and suggesting other sources to complement students' understanding.

**6. *What are the students' perceptions of the usefulness of using asynchronous online discussions on their learning and reading comprehension?***

Students displayed positive attitudes toward using AOD in their learning and participation. Most students enjoyed using AOD in their classes. Students perceived some changes in their learning including positive attitudes toward reading, learning at home and practising new learning methods. Various factors contributed to their learning, including the

flexibility of AOD, opportunity for participation, receiving feedback and reading peer examples and answers. Challenges to students were the lack of prior experience in using online group discussion for learning, having no clear understanding of how to discuss with others, feelings of isolation, lack of immediate responses and work overload issues.

***7. What are the teachers' perceptions of the usefulness of using asynchronous online discussions on teaching and learning in reading classes?***

Teachers perceived integration of AOD as useful to encourage students' participation and support comprehension. The main advantages of AOD cited by teachers are opportunities to apply new teaching methods and assessment tools, to introduce group discussion and use technology in teaching. In term of challenges to teachers, the major issues reported were the lack of experience in using the AOD approach, difficulty moderating and managing students' online group discussion and a heavy workload.

## **11.2 Implication and Recommendations**

There are significant implications that can be drawn from this study. These include implications for: (a) teaching reading comprehension and pedagogy; (b) teacher training and professional development, and policy makers; (c) designing effective BL including FTF and AOD; and (d) research methodologies and future research.

### **11.2.1 Implication for teaching reading comprehensions and pedagogy**

The results of the current research suggest some valuable implications and recommendations for the pedagogy and teaching of comprehension in Arabic reading classes as well as for changing teachers' and students' roles.

#### ***11.2.1.1 Teaching reading comprehension***

Although between-group comparisons showed that no significant change was observed in students' comprehension post-test scores due to the instructions used in the BL



when compared with FTF learning, the integration of AOD activities into FTF classes provided valuable opportunities for learning and supporting comprehension strategies. A within-groups comparison indicated that the explicit instruction in comprehension strategies used in FTF and BL may be one of the possible factors for the observed improvement. There are two main implications relating to insignificant differences observed and to the valuable benefits and opportunities of BL.

Various reasons were discussed in the previous chapter that could explain the insignificant results, including the short duration of the experiment and teachers' insufficient scaffolding and instruction for the three comprehension levels. To provide more effective online discussion activities, it would be recommended to first provide adequate time for teaching and practising each level of comprehension, irrespective of the learning design being tested. Second, adequate support, modelling, explanation and detailed feedback should also be offered by teachers for each level of comprehension, specifically the most difficult evaluative level. Third, it would be more valuable for students' comprehension to focus the students' discussion on mastering comprehension strategies, not merely asking them to answer more literal questions about the text. The results of within-groups comparison, taken together with previous research, may imply that explicit instruction was just one possible factor that can improve students' overall and specific comprehension levels in the BL group and some comprehension levels in the FTF group. Therefore, learning designs in both modes should include the provision of explicit instructions for students, of comprehension strategies as well as practical applications of the how to participate in AOD.

Regarding the valuable opportunities and advantages of applying AOD activities, some implications can be drawn. The results of this research implied that AOD expanded time for learning and thinking about the reading tasks gave students more opportunity to share knowledge and discuss with others, helped students to access and read many examples and

answers, and receive support from teachers and peers. AOD offered more opportunities for negotiation of meaning, which may result in refining students' understanding and comprehension through active engagement (McLaughlin, 2012). By expanding time after class, students had more opportunity to discuss their opinion, which was limited in FTF classes.

The empirical findings of this research implied that such blends of AOD activities and FTF learning, if designed carefully, could facilitate students' learning about reading comprehension by creating constructivist teaching and learning environments in which students take an active role as well as involving in social interaction with others. The instructional design applied in this study facilitated students' learning by providing opportunities for students to learn about comprehension strategies and skills. One form of social constructivist support is provision of scaffolding from peers and teachers when needed. Another important implication about how AOD contributed to students' comprehension is by changing some students' attitudes toward reading subjects. The AOD activities should be designed around these concepts as well as to include the most effective teaching strategies that have been proven in the literature to support students' reading comprehension, such as modelling, explicit instruction and group discussions.

#### ***11.2.1.2 Changing teachers' roles***

The integration of AOD has benefits for changing the current practice of teachers' roles. As reported in this research, teachers' moderation of AOD caused changes in their practice and roles in various ways. First, although teachers led all discussions, AOD minimised their domination by giving students more opportunities to voice their opinions and discuss with others, not only with teacher. Second, it helped to change teacher roles from being an information provider to adopting a facilitator role. Consequently, AOD requires teachers to embrace new teaching roles.

The teacher role was perceived to be critical in supporting the successful application and facilitation of AODs. It was learned from this study that without adequate support and effective facilitation, the students would find learning through AOD a challenging task. Insufficient scaffolding of students' comprehension may also result in limited student comprehension achievement.

#### ***11.2.1.3 Changing students' roles***

The combination of AOD and FTF learning was beneficial for changing some aspects of students' roles. Some students' roles changed from being only passive to being more active and for the student to be a regular contributor to the discussion and learning activities. In AOD, students were encouraged to take more responsibility for their learning. By applying AOD the learning was extended beyond the classroom, which maximised the students' opportunity for self-learning and independent learning. It may be inferred from this research that this method of learning could be promising and hold some benefits for changing the roles of students in the learning environment. It could be more beneficial and recommended if teachers give students more opportunity to lead discussions and choose set readings.

#### **11.2.2 Implications for professional development and policy makers**

One important implication of this study is that moderating and providing instruction for online interaction and group discussion learning requires teachers to master various teaching skills, knowledge and experience related to online learning. The students' and teachers' familiarity, as well as expertise, with this medium of communication influences the teachers' contribution to the teaching presence (T. Anderson et al., 2001). Without such teaching qualifications, it will be challenging for teachers to run successful online learning activities and achieve the desirable aims.

Therefore, in preparing teachers for teaching online and applying discussion approaches some steps must be taken. First, teachers should study and practise these

approaches of teaching and learning during their pre-service training at the university level. It is recommended that as a part of an academic program for pre-service teachers, some units on online and interactive teaching be integrated. More specifically, some units that focus on designing online learning instruction and activities are needed. This could assist teachers in becoming familiar with the online teaching and group discussion approaches. Moreover, ongoing teachers' professional development training program should be undertaken. These development programs could include training workshops that focus on developing teachers' online teaching skills and keeping them updated with recent changes in the field.

In addition, before participation in AOD students must also be prepared and familiarised with online learning environments and group interaction.

Policy makers and school principals should give special consideration to teachers' workloads. Workload was one of the challenges of moderating AOD activities identified in this study. It is recommended that to run successful AOD activities, the workload of moderators should be reduced in other areas. This is because moderating and facilitating AOD activities requires much effort and time, especially at the early stages of implementation.

### **11.2.3 Implications for designing an effective BL program**

The results of this research offer valuable insights for instructors who aim to implement BL that includes AOD and FTF learning. The first implication is that both types of learning are important and should complement each other. Using FTF learning alone has some limitations, such as time and participation restrictions; using AOD alone has some restrictions, such as the lack of physical aspects leading to feelings of isolation. Therefore, blending both learning designs can result in an improvement of teaching practice by minimising the limitations of FTF and AOD. Although computer-mediated communication tools are accepted as educational tools, they are unlikely to replace the traditional mode of

learning (FTF classes) (Tu & McIsaac, 2002). Therefore, attention should be given to incorporate the best of both modes in teaching practice.

The second implication related to the design issue is that the instructor should pay attention to the quality of the discussion so as to promote sustained and interactive discussions. As this study confirmed, a high percentage of student discussion consisted of answering teachers' questions. However, the instances of sustained, deep discourse were limited. The lack of the teachers' prior experience in supporting and promoting students' interaction in online learning with peers limited their interactions and consequently prevented a deep construction of meaning for many students. Therefore, it is recommended that teachers be trained and well prepared to moderate and facilitate a successful interactive and meaningful discussion. In addition, in designing such activities, attention should be paid to the quality of posts as well as to encourage meaningful, interactive and sustained discussions.

Teachers, instructional designers and researchers must also play various roles in order to provide effective BL. First and foremost, to design and organise the discussion activities, give clear expectations, guidelines and rules in order to help students to know and understand what, when and how they should contribute and participate. Second, the design should focus on facilitating and promoting interactive and responsive communication between students, not just focusing on posting correct answers and maintaining participation in the discussion. Third, the design of AOD or FTF activities should support students' understanding of the application of comprehension strategies and implement the most effective teaching strategies for supporting students' comprehension. These should include support, explanation, modelling and prompt, adequate feedback from teachers. Fourth and more specifically, the design should include instructions that teach students how to formulate questions, respond to others, justify and present their argument, and finally how to be supportive.

This research shows that incorporating online group discussion as a teaching and learning method was one of the major problems faced by teachers and students. The main reason for this is that teachers had not implemented this before and students had not experienced it either. The FTF classroom teaching styles may have influenced how students interacted in AOD. This difficulty could be attributed to the fact that traditional FTF learning does not facilitate interactive dialogue and has limited opportunities to incorporate small group discussion. In addition, this may be a reflection of the teacher-centered learning approach applied in the FTF classroom environment. Therefore, to provide effective learning experiences, it is highly recommended to offer more opportunities to introduce group discussion and interactive approaches in both FTF classrooms and AOD to promote students' skills and familiarity with such way of learning.

#### **11.2.4 Implications for future research**

There are some methodological implications that derive from this study and can inform future research. First, this study applied mixed-methods research that included a quasi-experimental design as well as qualitative approaches to investigate the effects of integration of AOD on the first year of secondary school students' reading comprehension levels. The application of mixed data collection and analysis methods (*e.g.*, tests, interviews and discourse content analysis) allowed the researcher to compare and validate the research findings, and consequently to have a more comprehensive understanding of the issues under investigation. It could be argued that some of the qualitative data collection methods also could have been applied prior to conducting the experimental study, including interviewing students in FTF and BL groups and teachers to compare their perceptions before and after the online discussions. This would give better understanding of how BL changes students' and teachers' perceptions over time.

An important implication for future research is extending the time of experiment. As the between-group comparison revealed in this study, there was no significant improvement attributed to BL design; it would be more beneficial if the intervention lasted for more than six weeks. This could have provided more time for students' to learn about the comprehension strategies.

In light of the current research conclusion and the complexity of the relationship between the quality of students' interactions and acquisition of reading comprehension, the researcher recommends that further research be carried out on this particular issue. The research should focus on investigating various aspects that relate to change in reading comprehension achievement. It will be significant for the future research to focus on the correlation between various factors that influence students' achievement in reading comprehension at secondary school level. Possible research foci could be the correlation between the students' participation rates and comprehension achievement scores or the association between the students' attitudes toward reading subjects, online discussion and reading comprehension achievement. It will be valuable to explore what factors could impact the changes in comprehension achievement and changes in students' participation. A further research focus could be on the correlation between the participation rates in online discussion forums and on FTF classroom setting.

Future research could also focus on investigating the differences between active and inactive participants and the contributing factors for both conditions. As implied from this research, there is a variation between students in their participation rates. As a further step, if these variations are explored it could contribute to the designing of effective and successful online discussions.

Another valuable area to research is the exploration of effective characteristics of social negotiation of meaning that would improve the reading comprehension at secondary

school level. More insights into the significance and contribution of students' interaction types would be enhanced by exploring how each type of discussion and interaction (*e.g.*, encouragement, scaffolding, reflection, asking questions) could affect and contribute to the students' reading comprehension achievement and participation.

To achieve a deeper understanding of the usefulness of blending AOD with FTF classes on the current practice of teaching Arabic language, future research should investigate this issue from a large number of teachers' perspectives. In this research, only two teachers participated, which is not a sufficiently comprehensive perspective of teachers in Saudi Arabia. To get a broader view, future research could include the views of policy makers and administrative staff about such design. Overall, more data gained from various perspectives, additional schools and larger teacher samples would strengthen the findings and conclusions of this study about the effectiveness of AOD in supporting FTF reading classes.

Another area of research related to the use of AOD and reading comprehension is to explore how various teaching comprehension strategies could be designed and delivered by using online discussion tools. In this study, group discussion strategy was delivered through teacher-initiated online discussion forums. In the next steps, researchers could investigate other strategies such as student-generated questions, literature circles, and so on.

### **11.3 Limitations**

As with most studies in the educational field, this study is by no means complete. Consequently, it has some limitations that are described below.

#### **11.3.1 Lack of previous research**

The first limitation encountered in this research was the lack of previous investigations on the impact of using online discussion forums at secondary school level in a Saudi Arabian context, and specifically within the context of Arabic comprehension reading.



This limitation makes it difficult to compare the current research results with other research carried out in the Saudi Arabian context. To compensate for this limitation, the findings were compared with research from different levels (*e.g.*, higher education) and focus (*e.g.*, other subjects), from Saudi Arabia as well as from other countries. Therefore, these comparisons and interpretations must be considered with caution.

### **11.3.2 Non-random sampling**

As reported in Chapter 4, this quasi-experimental study did not apply random assignment to the sampling units (students), as it was difficult to change the FTF classroom structure and organisation. This made it difficult to control all factors that may have affected students' reading comprehension achievement. In order to overcome this limitation, the researcher applied pre-tests and ANCOVA statistical analysis to control for the pre-existing variation between groups.

### **11.3.3 Time limits**

Limited time for training teachers and students was a major limitation observed in this research. This included short time to prepare teachers on AOD moderation and to prepare students on how to use AOD, as well as how to interact with their peers. Limited preparation of participants for the online discussion potentially influenced the effective use of AOD in this study.

In addition, the 12 AODs lasted six weeks. Each AOD was available only for 35 minutes during school time and open for three days after school. This limitation could have an influence on the quantity and quality of students' posts.

The time for focusing on each comprehension level was limited. As reported in Chapter 4, the literal and evaluative comprehension levels were covered in three discussions each, and inferential comprehension level was covered in six discussions. The short time for

discussing both literal and evaluative comprehension online may be on factor that influenced students' learning and reading comprehension achievement.

#### **11.3.4 Limitations for generalisability**

There are some factors that limit the generalisability of these research findings. First, this research was conducted in a particular context (Saudi Arabia reading comprehension), which restricts generalisation. Second, the small sample size affects the generalisation. The sample size was determined by the nature of the quasi-experimental design as well as the time constraints on this study. These study results therefore cannot be generalised to female students due to fact that the Saudi Educational System separates male from female students.

#### **11.4 Contribution of Research**

This research contributes to the research fields of online teaching and reading comprehension in various ways. This study contributes to the body of knowledge about the effectiveness of using AOD for secondary school reading comprehension instruction in Saudi Arabia. As reported in the Introduction and Literature Review chapters, there were no studies investigating the use of AOD in secondary school reading comprehension instruction in Saudi Arabia. Another contribution of the study to the body of knowledge is that this study combined different learning and instructional design to support students' comprehension and learning, including small group discussion and explicit instruction of comprehension strategies and online interaction between students.

This study has significance for the application of mixed research methods that evidence how the design could generate a deeper understanding on the implementation of BL.

The study highlights the potential advantages of AOD that could add to current teaching practices. It presents the possible challenges and obstructions that can occur in the process of such integration. The identification of advantages and challenges could assist

educators to provide an effective blend of online discussion teaching and FTF learning. As the Ministry of Education in Saudi Arabia has initiated and implemented several forms of online learning, this study could inform such online programs, especially at a secondary school level. The study provided an example of how FTF and online discussion learning can be blended for supporting reading comprehension practice.

In addition, because there was no existing test tool this study developed and provides tests to assess Arabic reading comprehension at three levels for students' at first year of secondary school in Saudi Arabia. However, these comprehension tests need improvement and should be piloted, revised and validated with a larger sample.

### **11.5 Final Conclusions and Remarks**

Overall, the findings of this study conclude that although there was no significant effect of blending AOD with FTF reading classes in terms of students' reading comprehension compared to FTF learning, the integration of AOD has the potential to benefit students' participation, learning about comprehension strategies, interaction and attitudes toward learning in reading classes. Based on this study and previous research, it can be said that the effective blending of online group discussion with FTF learning has the potential to support a shift in teaching reading practice, from teacher-centered learning to student-centered learning, individual learning to collaborative and interactive learning, transmission of information to co-construction of knowledge, and removal of time and place constraints from traditional FTF teaching and learning.

However, achieving these shifts in teaching reading comprehension practice and pedagogies poses a major challenge, as it requires careful design of activities, development of teachers' knowledge and skills in moderating online interaction and group discussion, and improvement of students' learning, discussion and interaction and thinking skills.

To conclude, as rapid and ongoing developments and changes are occurring in education practices and curricula in Saudi Arabia, particularly in the area of teaching reading and the application of communication technologies, it is important to introduce new methods of learning and teaching to facilitate productive and effective learning. This research provided an example of how blended learning that includes face-to-face and asynchronous online discussion can be designed and applied in reading classes at a secondary school level. Furthermore, it provides educators with examples that can guide them in implementing online group discussion, as a tool and approach to facilitate teaching and learning about reading comprehension.

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## **APPENDICES**



## Appendix A: Pre-test Reading Comprehension Texts and Questions

## Pre-test: Arabic Text 1 (Fingerprints)

## النص الأول: بصمات الأصابع

رقم  
المقطع

- ١ لا يستطيع أحد أن يدرك ما في تسوية **البصمات** من دلالة عظيمة، إلا إذا أدرك الحقيقة العجيبة التي توصل إليها العلماء ، بعد بحثٍ ودراسةٍ واستقراءٍ عبر السنين ، وفي مختلف أنحاء الأرض، وهي أنه يستحيل أن تتطابق بصماتان لشخصين مختلفين
- ٢ لقد استطاع العلم منذ عهدٍ غير بعيد أن يضع طريقةً خاصةً لحفظ بصمات الأصابع، وأن يبين أوجه الإفادة منها. ومنذ عام 1900 م اطرَد التقدم في الإفادة من بصمات الأصابع في شتى الوجوه والمرافق، التي تتطلب تحقيق شخصية الأفراد. ولقد أمكن حصر بصمات المجرمين الدوليين، ووضع نظام لترتيب بصمات أصابع اليد وحفظها، ونظام آخر لبصمات الأقدام. وسوف يُستخدم «التلفزيون» في المستقبل في نقل صور البصمات؛ ليسهل تعقب الجناة أينما كانوا وتحقيق شخصية الأفراد، بأقصى قدرٍ من السرعة.
- ٣ سطا لصٌّ على إحدى المستشفيات في اليابان عام ثمانين وثمان مئة وألف ، بعد أن تسلَّق إحدى المداخل، فترك أثراً سوداء واضحة لبصمات أصابعه، على أثاث المستشفى الناصع البياض، فقام أحد أطباء المستشفى بفحص هذه الآثار، ومقارنتها - عن طريق المجهر ببصمات الفاعل الذي ضُبط فيما بعد، فتبين أنها مطابقة لبصماته.
- وهكذا بدأ التفكير في الإفادة من البصمات الفردية ، في كشف الحوادث الجنائية الغامضة ، ولكن ذلك اقتصر على إقامة الدليل في إثبات التهمة على الفاعل وضبطه. وكانت الإفادة منه متوقفة على دقة التحريات ، ومدى نجاحها في إدخال الفاعل ضمن المشتبه فيهم
- ٤ ثم تقدّمت وسائل إظهار البصمات الخفية، ورفعها في أماكن الحوادث الجنائية، ووضِع نظامٌ لتسجيل البصمات الفردية، لمن اعتادوا الاعتداء على النفس والمال ، وذلك لمقارنتها بالبصمات التي تُرْفَع من أماكن ارتكاب الجريمة ثم تقدّمت نظم تسجيل البصمات ، حتى أصبح في الإمكان التعرف على شخصية المجرم المجهول ، الذي يترك بصماته في مكان الحادث ، ولو لم يترك وراءه سوى بصمة واحدة.
- ٥ وتعدّ البصمات الآن دليلاً علمياً **قاطعاً**، لا يتطرق إليه الشك أمام القضاء ، وأمام جميع الهيئات التي تماثلها ، حتى ولو لم تدعها أدلة أخرى. وقد أثبتت الطرق العلمية التي استخدمها علماء البصمات استحالة تطابق بصماتين لشخصين مختلفين ، بل لأصبعين مختلفين لشخص واحد ، وذلك لأن احتمال وجود هذا التطابق لا يحدث إلا بين عددٍ يبلغ أضعافاً مضاعفةً لعدد سكان الكرة الأرضية، وبعبارة أخرى، لا يمكن أن يوجد احتمال تكرر بصمة واحدة لشخصين مختلفين، إلا بين أربعة وستين ملياراً من الأشخاص، ولا يمكن تطابق بصمات الأصابع العشرة في شخصين مختلفين على سبيل الاحتمال إلا مرة واحدة ، في كل سبعة وثلاثين وثلاث مئة ، وستين وست مئة ألف ، وأربعة ملايين من القرون!! فإذا علمنا أن عدد سكان الأرض كلها اليوم يبلغ ستة بلايين ونصف البليون من الناس ، أدركنا الاستحالة التامة لوجود أي تطابق في البصمات.
- ٦ والبصمات يُنتفع بها في عدد من الأوجه ، لا تكاد تقف تحت حصر لأنها بعيدة عن مواطن الشك في إثبات الشخصية، ويصلح استعمالها من جميع المرافق والمهام، التي يراؤ بها تعيين فرد بذاته ، تستوي في ذلك الأغراض المدنية والتجارية، والوظيفية والجنائية. وقد وضعت بعض الدول أنظمة تمنع ارتكاب الغش، والتزوير في الصكوك والمستندات الوظيفية والمدنية والتجارية، وذلك باستخدام بصمات الإصبع بدلاً من التوقيع، وتستخدم بصمات الإصبع - أيضاً في منع اشتغال المجرمين في الوظائف والمهن، والخدمات التي تتطلب الأمانة والاستقامة أربابها.
- ٧ وتجدر الإشارة إلى أن الشكل الظاهر لبصمات الأصابع ، يمكن الاستدلال منه على عمر صاحبه. كما أنه يُستدل من البصمات على مهنة الشخص؛ فسبحان الخالق العظيم ، جلّت قدرته ، وتناهت عظمته!

### **Pre-test: Translated copy of Text 1 (Fingerprints)**

- 1- No one could realize what the making of the fingertips has as a great indication unless they realize the strange fact which the scientists have found after a lot of research and study and induction throughout history in different parts of the world which is that it is impossible to have identical fingerprints of two different people.
- 2- Science was able, not long ago, to find a special method of storing fingerprints and to identify the ways of benefitting from that achievement. Since the year 1900 the advancement has accelerated in the field of benefitting from fingerprints in various aspects and facilities which require verifying the identities of the individuals. It was possible to identify the fingerprints of international criminals and establish a system to organize the fingerprints and store them and another system for the toe prints. Television will be used in the future to broadcast pictures of the fingerprints to facilitate the process of locating criminals wherever they are and verify the identity of individuals with maximum speed.
- 3- A thief burgled a hospital in Japan in 1880 after he climbed a chimney. He left clear black marks of his fingerprints on the bright white hospital furniture. One of the hospital doctors examined these marks and compared it under the microscope with the fingerprints of the perpetrator, who was caught later on, and it was found that the marks match his fingerprints.  
That's how people started to think about benefitting from individual fingerprints in finding the perpetrators in mysterious criminal incidents. But it was limited to be used as an evidence to prove the charge against the criminal and arrest him. The benefit was dependant on the accuracy of the investigation the success to include the perpetrator among the suspects.
- 4- The means of identifying the invisible fingerprints and collect them in criminal incidents and put a system of recording the individual fingerprints of those who were used to attack people and property and to compare it with the fingerprints collected from the crime scene. Then the fingerprints recording systems have advanced till it was possible to identify the unknown perpetrator who leaves his fingerprints at the crime scene even if he left one fingerprint behind.
- 5- Fingerprints are now considered exclusive scientific evidence, undoubtedly in front of courts and in front of all similar institutions even if it is not supported by other forms of evidence. The scientific methods used by fingerprints scientists has proved that it is impossible for two fingerprints of two persons to be identical even for two different fingers of the same person because the possibility of having two identical fingerprints can only happen among people who number as many folds of the inhabitants of Earth, in other words the only possibility of having the same fingerprints of two different people is among 64 billion people. And the only possibility of having identical fingerprints for the ten fingers for two different persons, as a matter of probability can happen only once in 4660337 centuries!!! When the number of the inhabitants of the earth is 6.5 billion people we realize the total impossibility of finding two identical fingerprints.
- 6- Fingerprints are useful in many ways which are hard to number because it cannot be doubted in proving the identity. It can be used in all areas and functions where it is required to identify a certain person whether in civil, commercial, employment or criminal purposes. Some countries have established anti fraud and anti forgery systems in employment, civil and commercial documents and deeds by using fingerprints instead of signatures. Fingerprints are used also in having criminals engaged in jobs, trades and services which require honesty and integrity of the people who perform them.
- 7- It is worth mentioning that the external appearance of fingerprints can tell the age of the person who owns them. It can tell about the profession of the person as well. Glory to the Great creator, The Almighty of unlimited magnificence.

## Arabic Pre-test Questions for Text 1: (Fingerprints)

### اختبار النص الأول (بصمات الأصابع)

#### الأسئلة

#### السؤال الأول: اكتب إجابتك في الفراغ المعطى

ذكر المؤلف فوائد استخدام بصمات الأصابع، اكتب فائدتين في الفراغين المعطاه:

١. .... ٢. ....

#### السؤال الثاني إلى التاسع اختر إجابة واحدة فقط:

#### السؤال الثاني: بناءً على النص، في عام ١٩٠٠ م:

١. بدأ استخدام التلفاز في الكشف عن بصمات الأصابع
٢. اكتشفت بصمات الأصابع في إحدى المستشفيات في اليابان
٣. اطرء التقدم في الافادة من بصمات الأصابع في شتى المجالات
٤. بدأ استخدام الأصابع في مستشفيات الولادة

#### السؤال الثالث: الفكرة الرئيسية في النص هي:

١. شرح كيفية استخدام الأصابع في الكشف عن المجرمين
٢. ذكر قصة اكتشاف بصمات الأصابع
٣. شرح تطور واستخدامات بصمات الأصابع في مجالات مختلفة
٤. ذكر استخدامات بصمات الأصابع في المستشفيات.

#### السؤال الرابع: كلمة (قاطعاً) ، المقطع هو:

١. ليس دليلاً قوياً
٢. غير مثبت
٣. دليل قوي ومثبت
٤. لا يمكن الإعتماد عليه.

#### السؤال الخامس: نستنتج من المقطع ٦ ، إن:

١. استخدام بصمات الأصابع يشجع الأمانة والصدق في المجتمع
٢. بصمات الأصابع تستخدم فقط لتحديد السلوكيات السيئة مثل السرقة
٣. استخدام بصمات الأصابع لا يشجع الأمانة والصدق في المجتمع
٤. استخدام بصمات الأصابع لا يحمي المجتمع من السلوكيات السيئة

#### السؤال السادس: بناءً على النص، بصمات الأصابع تستخدم كدليل قاطع بسبب:

١. سهولة الكشف عنها.
٢. صعوبة العثور على بصمتين متطابقتين لشخصين مختلفين
٣. اكتشافها منذ زمن قديم
٤. استخدامها في مجالات كثيرة.

السؤال السابع: اعتمد الكاتب في النص على

١. ذكر أسماء مكتشفي بصمات الأصابع ٢. ذكر الأرقام والحسابات الدقيقة ٣. ذكر أقوال العلماء ٤. ذكر الرأي الشخص

السؤال الثامن: الهدف من كتابة هذا المقال هو:

١. تسلية القارئ ٢. إقناع القارئ ٣. تثقيف القارئ حول فوائد بصمات الأصابع

السؤال التاسع: هل هذه العبارة: "يستحيل أن تتطابق بصمتان لشخصين مختلفين." التي أوردها الكاتب في نص بصمات الأصابع تمثل رأياً أم حقيقة ؟

١. رأي

٢. حقيقة

### Translated Copy of Pre-test Questions for Text 1: (Fingerprints)

**Question 1: Write your answer in the spaces provided**

---

**Question 1: The writer mentioned the benefits of using fingerprints. Mention two of them:**

1. ....
2. ....

**Questions 2 to 9: Choose only one answer**

---

**Question 2: According to the passage, in 1900:**

- 1- Television started to be used for finding fingerprints
- 2- Fingerprints were discovered in a hospital in Japan
- 3- Advancement continued to benefit from fingerprints in many fields
- 4- Fingerprints started to be used in maternity hospitals

---

**Question 3: The main idea in the passage is:**

- 1- To explain the use of fingerprints for finding criminals
- 2- To tell the story of discovering fingerprints
- 3- To explain the development and use of fingerprints in different fields
- 4- To mention the uses of fingerprints in hospitals

---

**Question 4: The synonym for the word (exclusive) in paragraph 5 is:**

- 1- Not strong evidence
- 2- Hasn't been proofed
- 3- Strong evidence and proofed
- 4- Not reliable

---

**Question 5: We understand from paragraph 6 that:**

- 1- Using fingerprints encourages honesty and truthfulness in society
- 2- Fingerprints are used only to determine bad behaviour, like theft
- 3- Using fingerprints doesn't encourage honesty and truthfulness in society
- 4- Using fingerprints doesn't protect society from bad behaviour

---

**Question 6: According to the passage, fingerprints are used as decisive evidence because:**

- 1- They are easy to find
- 2- It is hard to find two identical fingerprints for two different people
- 3- They have been discovered for a long time
- 4- They can be used in many fields

---

**Question 7: The writer in the passage relied on:**

- 1- Mentioning the names of the people who discovered fingerprints
- 2- Mentioning numbers and accurate calculations
- 3- Mentioning quotes from scientists
- 4- Mentioning his own opinion

---

**Question 8: The aim of writing this article is to:**

- 1- Entertain the reader
- 2- Convince the reader
- 3- Inform the reader about the benefits of using fingerprints

---

**Question 9: “It is impossible to have identical fingerprints of two different people”. Is this statement from the passage ‘fingerprints’ an opinion or a fact?**

- 1- An opinion
- 2- A fact

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## Pre-test: Arabic Text 2 (Trades and Professions)

## النص الثاني: الحرف والمهن

رقم  
المقطع  
١

لا يَكْفِي الوَالِدَ أَنْ يَعُولَ بِنِيهِ عَلَى وَجْهِ لَائِقٍ بِمَقَامِهِ ، موافقٍ لحالِهِ ، بل عَلَيْهِ أَنْ يَعْلَمَهُمْ مِنَ الْمِهْنِ مَا يُعِيْنُهُمْ عَلَى الْارْتِزَاقِ والتَعِيْشِ بِطَرَقٍ شَرِيفَةٍ ، وَيُقَوِّمَهُمْ فِي الْمُسْتَقْبَلِ عَلَى الْقِيَامِ بِنَفَقَاتِ عِيَالِهِمْ مِمَّا يَسْتَدِرُّوْنَهُ مِنَ الْمِهْنَةِ الَّتِي اقْتَنَسُوْهَا ، وَمَهْمَا بَلَغَ الْمَرْءُ مِنْ بَسْطَةِ الْيَدِ وَالْخَفْضِ وَالسَّعَةِ ، فَلَا مَنَدُوْحَةٌ لَهُ عَنْ أَنْ يُحَيِّبَ إِلَى بَنِيهِ الْعَمَلَ وَيُعَوِّدَهُمُ السَّعْيَ وَرَاءَ الرِّزْقِ ، وَلَا عُذْرَ لَهُ فِي مَا لَوْ أَغْضَى عَنْ تَعْلِيمِهِمْ إِحْدَى الْحِرَفِ الَّتِي تَفْتَحُ فِي وُجُوْهِهِمْ أَبْوَابَ الْاِكْتِسَابِ اعْتِمَاداً عَلَى مَا لَدَيْهِ مِنَ الْأَمْوَالِ.

٢

وَجَمِيعُ الْحُكَمَاءِ فِي الدُّنْيَا لَا يَدْجُرُونَ وَسْعاً فِي حَثِّ بَنِيهِمْ ، عَلَى النَّشَاطِ وَالذَّابِّ فِي الْعَمَلِ ، عَلَماً مِنْهُمْ بِمَا يَنْجُمُ عَنْ ذَلِكَ مِنَ الْفَوَائِدِ الْجَلِيلَةِ لَهُمْ وَلِأَوْلَادِهِمْ ، فَضْلاً عَنْ أَنَّهُمْ بِهَذِهِ الطَّرِيقَةِ يَخْتَاطُونَ لِأَمْرِ بَنِيهِمْ ، بَحِيْثُ إِذَا دَارَتْ عَلَيْهِمُ الدَّوَانِرُ فَافْقَدَتْهُمْ أَمْوَالُهُمْ لَمْ تَغْلُقْ فِي وُجُوْهِهِمْ أَبْوَابَ الْارْتِزَاقِ ، بَلْ رُبَّمَا تَمْكُنُوْا بِفَضْلِ الْحِرَفِ الَّتِي تَعْلَمُوْهَا مِنْ أَنْ يَسْتَرْدُوا الْأَمْوَالَ الَّتِي خَسَرُوْهَا وَيَسْتَرْجِعُوْا الْمَقَامَ الَّذِي كَانُوا عَلَيْهِ فِي الْمَجْتَمَعِ. وَلِذَلِكَ نَرَى عَلَيَّةِ الْقَوْمِ وَأَرْبَابِ الثَّرْوَةِ الْعَرِيضَةِ يَنْدُلُونَ قُصَارَى الْمَجْهُودِ فِي أَنْ يُعْلَمُوا أَوْلَادَهُمُ الْمِهْنَ الْعَالِيَةَ ، حَتَّى إِذَا قَلَبَ لَهُمُ الدَّهْرُ ظَهَرَ الْمَجْنُّ ، لَمْ يَدْعُمُوا وَسِيْلَةً يَنْسَبِبُونَ بِهَا إِلَى الْارْتِزَاقِ ، خَوْفاً مِنْ أَنْ يُصْبَحُوا عَلَى عَاتِقِ الْبَشَرِيَّةِ حَمَلاً فَاحِداً أَوْ يَنْظُرَ إِلَيْهِمُ الشَّامِتُونَ بَعِيْنَ الْاِزْدِرَاءِ. وَلَأنَّ يَكْفَى الْمَرْءُ وَيُدْفَنُ فِي ظُلُمَاتِ الرُّمُوسِ خَيْرٌ لَهُ مِنْ أَنْ يَخْتِاجَ إِلَى غَيْرِهِ. وَلَا سِيْمَا فِي الشُّؤْنِ الْمَعِيشِيَّةِ

٣

إِنْ الْحَيَاةُ لَا يَسْتَلِمُ أَحَدٌ مِنْ كَوَارِثِهَا مَهْمَا عَلَا مَقَامُهُ ، وَغَزَرَتْ ثَرْوَتُهُ ، وَتَوَطَّدَ عِزُّهُ ، فَكَمْ مِنْ بَيْتٍ عَرِيْقٍ فِي الْحَسَبِ ، بَعِيدٍ الْمَدَى فِي الْعَنَى ، قَدْ ذُكِّمَ مِنْ أَسْبِهِ لِنَغَاضِي أَرْبَابِهِ عَنْ تَعْلُمِ الْحِرَفِ ، وَكَمْ مِنْ بَيْتٍ كَانَ الْفَقْرُ مَخِيْماً عَلَيْهِ. وَالشَّقَاءُ مَكْتُوباً عَلَى جُذْرَانِهِ ، وَالْخُمُولُ مَشْدُودَ الْأَطْنَابِ فِي زَوَائِيهِ ، قَدْ أَحْرَزَ أَهْلُهُ بِفَضْلِ الْمِهْنِ الَّتِي زَاوَلُوْهَا ثَرْوَةً لَا تُحْدَ ، وَجَاهاً بَعِيدَ الْمُتَنَاوَلِ ، وَمَقَاماً بَازِحاً لَا يُطَاوَلُ. وَإِذَا كَانَ الْمَتَمَوِّلُونَ وَأَصْحَابُ الْيُسْرِ لَا يُعْذَرُونَ فِي عَدَمِ تَعْلِيمِ بَنِيهِمُ الْحِرَفَ فَمَا قَوْلُكَ فِي أَهْلِ الْفَاقَةِ وَالْعَوَزِ وَهُمْ مِنْ أَحْوَجَةِ النَّاسِ إِلَيْهَا ، وَأَشْعَرَهُمْ بِفَوَائِدِهَا ؟ فَكَمْ مِنَ الْأَبَاءِ السَّيْنِيِّ الْحَالِ يَتْرَكُونَ أَوْلَادَهُمْ فِي الْأَرْزَاقِ كَالْهَمَلِ الَّتِي لَا رَاعِيَّ لَهَا ، فَيَنْتَشِرُونَ مِنَ الرَّعَاعِ سُمُّ الْفَسَادِ وَيُرِيُونَ عَلَى الْمَخَازِي ، وَيَتَزَعَّرُونَ عَلَى الْأَخْلَاقِ اللَّئِيْمَةِ ، وَالْخِلَالِ الدَّنِيَّةِ. فَإِذَا أَحْوَجَهُمُ الْأَمْرُ إِلَى الْعَيْشِ ضَاقَتْ فِي وُجُوْهِهِمُ الْجَبِلُ ، فَيَلْتَجِنُونَ إِلَى النَّهْبِ وَالسَّلْبِ أَوْ غَيْرِهِمَا مِنْ ضُرُوبِ الْمُنْكَرَاتِ تَوَسُّلاً إِلَى الْمَعِيشَةِ حَتَّى تَتَسَاوَقَ الشَّتَائِمُ عَلَيْهِمْ ، وَعَلَى آبَائِهِمْ مِنْ كُلِّ قَمٍ

٤

فَاعْتَبَرُوا أَيُّهَا الْأَبَاءُ ، وَاخْشَوْا سُوءَ الْعَوَاقِبِ ، وَارْحَمُوا صِغَارَكُمْ ، وَمَهْدُوا لَهُمْ أَسْبَابَ الرَّاحَةِ وَالسَّعْدِ فِي هَذِهِ الدُّنْيَا ، وَذَلِكَ بِتَعْلِيمِهِمْ مِهْنَةً تَوْفَّرَ لَهُمْ أَسْبَابُ الْمَعِيشَةِ وَتَقْبِيهِمْ غَدَرَاتِ الزَّمَانِ ، وَتَقْلِبَاتِ الْأَيَّامِ وَلَأنَّ تَوَرُّوْهُمْ مِهْنَةً مَلَامَةً لِحَالَتِهِمْ أَصْلَحَ لَكُمْ وَلَهُمْ مِنْ أَنْ تَخْلُقُوا لَهُمْ مَالاً لَا بَدَ مِنْ أَنْ يَبْذُرُوْهُ فِي الْمَحْظُورَاتِ آجَلاً أَوْ عَاجِلاً إِذَا لَمْ يَكُنْ عِنْدَهُمْ مِهْنَةٌ تَلْهِيهِمْ عَنِ الْمَذَاهِبِ الْمَوْبِقَةِ ، وَالْمَنَاحِي الْمَخْجَلَةِ. فَإِذَا انْتَصَحْتُمْ جَنِيْتُمْ ثَمَرَةَ الْاِنتِصَاحِ ، وَالْاِحْصَادُ شَوْكُ النَّدَمِ ، وَذَقْتُمْ الْحَنْظَلَ.

٥

فَإِذَا أَرَدْتُمْ بِهَا الْأَبَاءُ أَنْ تَوْسِّسُوا لِبَنِيكُمْ مُسْتَقْبَلاً سَعِيداً فَعَلِّمُوْهُمْ مِنْ صَغَرِهِمْ حِرْفَةً تُغْنِيَهُمْ عَنِ الْاِلْتِجَاءِ إِلَى غَيْرِهِمْ ، وَتُقَوِّمَهُمْ عَلَى عِيَالَةِ أُسْرَةٍ كَبِيرَةٍ يَرْبُونَهَا عَلَى طَرِيقَةٍ تَنْفَعُ وَطَنَهُمْ. وَرُبَّ حِرْفَةٍ أَوْرَثَتْ صَاحِبَهَا الشَّرَفَ ، وَدَفَعَتْ عَنْهُ آفَاتِ الْعُسْرِ ، وَأَقْصَتْهُ عَنْ مَهَاوِي التَّلَفِ.

**Pre-test: Translated copy of Text 2 (Trades and Professions)**

- 1- It is not enough for a parent to bring up his children in a way that matches his standing and suits his situation but he has to teach them trades that can help them to earn living and live an honourable life and empower them in the future to support their children from what they earn from the trade they had learned. Regardless of a person's wealth and riches he has to liken the work to his children and accustom them to looking for work. He has no excuse if he didn't teach them trades which open the doors of earning for them and not to rely on his wealth.
- 2- All wise people in life don't spare an effort urging their children to be active and work hard, as they know what that entails of great benefits for them and their children. In addition to that in this way they safeguard for their children in case they fall on hard times and they lose their money so the doors to earning living won't be closed in their faces. They will probably be able by the virtue of the trades they learned to regain the money they lost and restore the standing they have in the community. That's why we find the high ups and those with great wealth try their best to teach their children the top professions so if things turn sour they won't lack the means to earn living, in fear of becoming a heavy burden on others or those who rejoice and look at them with despise. So the person would rather be enshrouded and buried in the darkest of graves than to be in need of others, especially in living matters.
- 3- No one, doesn't matter how high he is, or how rich he can be or how solid his glory, is safe from the calamities of life. Many families who have descended from tremendously wealthy background were ruined from the foundations because the people in charge of them have overlooked learning trades. Likewise so many houses whose occupants lived in poverty and misery was written on their walls and laziness was deep rooted in them, those occupants have made big fortunes and achieved fame and high position by the virtue of the trades they practiced. If the rich and the wealthy are not excused for not teaching their children trades so what about the needy and poor when they are the ones who need it and should feel its benefits most. So many underprivileged parents let their children in the streets like the discarded who have no shepherd as they get from the mob the poison of corruption and are brought up with shameful behavior and are reared with bad behavior and evil ethics. If they have to survive they find that the doors are locked in their faces so they resort to looting and robbery or other kinds of evil behavior in order to earn living, then they and their parents are cursed by everyone.
- 4- Take heed O parents, and be afraid of the bad results and have mercy on your off springs and pave the way of comfort and good luck in this life and the life to come by teaching them a trade that can offer them the means of living and protect them from rainy days and the changes of fortune and leave them with a trade that suits them, that will be better for you and for them as well. That will be better than leaving them money which they might waste sooner or later on prohibitions if they don't have a trade that keeps them away from dirty and shameful behavior. If you heed the advice you will earn the fruits of that, otherwise you will earn the thorns of regret and taste the bitterness of the bitter melons.
- 5- O parents if you want to establish a happy future for your children you need to teach them, from a young age, a trade that can keep them away from relying on others and empower them to support a big family and bring them up in a way that benefit their country. A trade might bestow honour on its practitioner and keep the evils of hardship away from him and keep him away from harm ways.



## Arabic Pre-test Questions for Text 2: (Trades and Professions)

### اختبار النص الثاني (الحرف والمهن)

#### الأسئلة

السؤال الأول: اكتب إجابتك في الفراغ المعطى

ذكر المؤلف فوائد تعلم الحرف والمهن ، اكتب فائدتين منها:

١.....

٢.....

السؤال الثاني إلى الثامن اختر إجابة واحدة فقط:

السؤال الثاني: ذكر الكاتب في النص إن مسؤولية الآباء هي:

١ . إعالة أبنائهم والإنفاق عليهم فقط

٢ . الإنفاق عليهم مع تعليمهم حرفة أو مهنة

٣. ترك الأبناء يتحملون مسؤولية مستقبلهم

٤ . عدم الإهتمام بتعليمهم الحرف إذا كانوا أغنياء

السؤال الثالث: الهدف الرئيس من المقطع ٣ هو:

١ . شرح فوائد تعلم المهن

٢ . شرح أضرار إهمال تعليم الأبناء الحرف والمهن

٣ . بيان حرص الحكماء على تعليم أبنائهم الحرف

٤ . بيان أثر تعلم الحرف في مستقبل الأبناء

السؤال الرابع: معنى كلمة (فلا مندوحة له، المقطع الأول، السطر الثالث) هو:

١ . لا بد                      ٢ . الأمر راجع إليه                      ٣ . من الأفضل له                      ٤ . لا يجب عليه

السؤال الخامس: أيهما أفضل في رأي الكاتب " الغني الذي لا يمتلك حرفة أو الفقير الذي يمتلك حرفة":

١ . كلاهما متساويان

٢ . الغني الذي لا يمتلك حرفة

٣ . الفقير الذي لديه حرفة

٤ . لم يفرق بينهما الكاتب

السؤال السادس: يشير الكاتب في النص إلى أن:

١ . الأغنياء فقط هم الذين يجب أن يعلموا أبناءهم الحرف

٢ . الأغنياء والفقراء يجب أن يعلموا أبناءهم الحرف

٣ . الفقراء هم الذين يجب أن يتعلموا الحرف

٤ . الأغنياء ليسوا بحاجة إلى تعلم

السؤال السابع: فاعتبروا أيها الآباء، واخشوا سوء العواقب وارحموا صغاركم، ومهدوا لهم أسباب الراحة والسعادة في هذه الدنيا. العاطفة السائدة في هذه الجملة (المقطع الرابع) تدل على:

١ . الفرح                      ٢ . التفاؤل                      ٣ . الخوف                      ٤ . الغضب

السؤال الثامن: هل هذه العبارة: "وَرُبَّ حَرَفَةٍ أَوْرَثَتْ صَاحِبَهَا الشَّرَفَ ، وَدَفَعَتْ عَنْهُ آفَاتَ الْعُسْرِ ، وَأَقْصَتْهُ عَنْ مَهَاوِي النَّفْسِ" التي أوردها الكاتب في هذا النص تمثل رأياً أم حقيقة ؟

١. رأي

٢. حقيقة

**Translated Copy of Pre-test Questions for Text 2**  
**(Trades and Professions)**

**Question 1: Write your answer in the spaces provided**

---

**Question 1: The writer mentioned the benefits of learning a trade or a profession. Mention two of them:**

1. ....
2. ....

**Questions 2 to 8: Choose only one answer**

---

**Question 2: The writer in the passage says the responsibility of the parents is:**

- 1- To support their children and pay for them
- 2- To pay for them and teach them a trade or a profession
- 3- To leave it to the children to take responsibility for themselves
- 4- Not to be concerned about teaching them a trade if they are rich

---

**Question 3: The aim for writing paragraph 3 is to:**

- 1- Explain the benefits of learning professions
- 2- Explain the risks of neglecting to teach children a trade or profession
- 3- Show the care taken by wise parents to teach their children trades
- 4- Show the effects of learning trades on children's futures

---

**Question 4: The meaning of (فلا مندوحة له) in the first paragraph, third line is:**

- 1- He must
- 2- It is up to him
- 3- It is better for him to
- 4- He must not

---

**Question 5: According to the writer, which one is better, "The rich who doesn't have a trade or the poor who has a trade"?**

- 1- They are both the same
- 2- The rich person who doesn't have a trade
- 3- The poor person who has a trade
- 4- The writer didn't state any difference

---

**Question 6: The writer in the passage indicates that:**

- 1- The rich should teach their children a trade
- 2- The rich and the poor should teach their children a trade
- 3- The poor should learn a trade
- 4- The rich don't need to learn a trade

---

**Question 7:** “**take heed** Oh parents, and be afraid of the bad results and have mercy on your off springs and pave the way of comfort and good luck in this life”.

**The overwhelming sentiment in this sentence (paragraph 4) indicates:**

- 1- Joy
- 2- Optimism
- 3- Fear
- 4- Anger

---

**Question 8:** “A trade might bestow honour on its practitioner and keep the evils of hardship away from him and keep him away from harm ways”

**Is this statement from the passage, an opinion or a fact?**

- 1- An opinion
- 2- A fact

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## Appendix B: Post-test Reading Comprehension Passages and Questions

## Post-test: Arabic Text 1 (Smoking)

## النص الأول: التدخين

رقم  
المقطع

- ١ التدخين يسبب كثيراً من المخاطر، وله دورٌ كبيرٌ في الإصابة بكثير من الأمراض، ومن أهمها بعض أمراض القلب، وسرطان الرئة، والالتهاب الرئوي، كما أنه يساعد على العجز، وعدم القدرة، ويزيد نسبة الوفيات.
- ٢ ومن الدراسات التي أجريت، لإثبات مدى العلاقة بين التدخين والإصابة بسرطان الرئة، الذي لوحظ أن نسبة وفاة المصابين به تزدادُ بازدياد استهلاك السجائر، من هذه الدراسات دراساتٌ قارنت بين المدخنين المصابين ببعض الأمراض، ونظراً لهم من المدخنين غير المصابين. وقد أظهرت هذه الدراسات ارتباط بعض الأمراض المعينة، بعادات التدخين. ومما شملته هذه الدراسات اختباراً! الوظائف القلب والرئة لبيان أثر التدخين الوقي والمزمن عليهما!
- ٣ وأجريت دراسات أخرى لمقارنة حالات كثيرة من المدخنين بأخرى مماثلة من غير المدخنين، وبيان نسبة الوفيات والعجز. وقد استمرت المقارنات عدة سنوات متتالية في كل من كندا، والولايات المتحدة الأمريكية، والمملكة المتحدة. وقد أكدت هذه الدراسات وجود ارتباط بين التدخين وازدياد نسبة الوفيات، والعجز، نتيجة لأمراض معينة.
- ٤ وترجع الزيادة في نسبة الوفيات بين مدخني السجائر، إلى زيادة نسبة الإصابة ببعض الأمراض، ومن أهمها: السرطان الرئوي، والالتهاب الرئوي، والقصباء الهوائية، وأمراض القلب، والجهاز الوعائي، بالإضافة إلى التعرض لأمراض أخرى: كسرطان المعدة، والحنجرة، والبلعوم، والمثانة.
- ٥ والمدخنون يبذلون مجهوداً أقل من مجهود غير المدخنين، في الخدمة العامة، وفي العمل اليومي، بسبب كثرة إصابتهم بالأمراض، وملازمتهم الفراش، وبسبب الضعف الذي ينتاب المدخنين.
- ٦ وقد أثبتت الدراسات أيضاً أن هناك علاقة كبيرة بين التدخين والإصابة بالتهاب الشعب الهوائية، وأن السعال والبلغم ينتشران بين المدخنين بمقدار ما يدخنون، وذلك يؤدي إلى ضيق الممرات الهوائية، وإعاقة تبادل الغازات في الرئة، مع ما يترتب عليه من نتائج خطيرة.
- ٧ ومما أثبتته الدراسات كذلك، أن أمراض القلب تزداد بين المدخنين عنها بين غيرهم. وتعد الذبحة الصدرية من الأمراض الأكثر شيوعاً بين المدخنين، وتزيد الخطورة بين الأشخاص ذوي ضغط الدم المرتفع، والمصابين بالسمنة، والسكر، وارتفاع نسبة الكوليسترول في الدم. وظهر من البحث أن دخان السجائر، يؤدي إلى زيادة إفراز معين من الغدة الكظرية، ويقود إلى لزوجة الصفائح الدموية، مع زيادة التعرض للنزيف وزيادة تركيز الدهون في الدم، وزيادة ضربات القلب، التي قد تسبب الموت المفاجيء. وقد يؤدي التدخين إلى الإصابة بتصلب الشرايين، الذي يؤدي إلى العجز أو الوفاة نتيجة لتوقف وصول الدم إلى المخ، أو إلى الأرجل. ومن الأمراض المرتبطة بالتدخين أيضاً سرطان الفم، والبلعوم، والمثانة والقرحة المعدية والسل الرئوي.
- ٨ ومن المضار التي أثبتت الدراسات ارتباطها بالتدخين، أن التدخين يؤدي إلى نقص في وزن المولود، عندما تدخن المرأة أثناء الحمل، ويعرض الحامل للإجهاض، ويؤدي التدخين -أيضاً- إلى نقص في وزن المدخنين!
- ٩ هل في كل هذا ما يدق ناقوس الخطر؟، وهل يدرك صغار الشباب بصفة خاصة، مدى ما ينتظرهم من أخطار وأضرار، إذا فكروا في التدخين، وأقدموا عليه؟!
- ١٠ إن كل الجهات التي يعينها الأمر، والأجهزة الصحية بصفة خاصة، يجب أن تتحرك، وأن تعمل على حماية الناس من هذه الأضرار، وألا تترك الشباب ينزلقون إليها، سعياً وراء التقليد الزائف، وجرياً وراء وهم العظمة الكاذب.

**Post-test: Translated copy of Text 1 (Smoking)**

- 1- Smoking causes a lot of risks and plays a big role in a lot of illnesses mainly heart diseases, lung cancer and respiratory infections. It also has a lot of effects on aging and disability, it increases the rate of death
- 2- From the studies which were done to prove the correlation between smoking and lung cancer which showed that the rate of deaths among those who get that type of cancer increases with the number of cigarettes smoked. From these studies there were studies which compared between smokers who were inflicted with some diseases and some peers who were non smokers. These studies showed the correlation of some particular diseases and smoking. What was included in these studies was the functions of the heart and lung to show the effect of chronic and temporary smoking on them
- 3- Other studies were done to compare many cases of smokers with other cases of non smokers and to show the rate of deaths and disabilities. This comparison continued for several consecutive years from Canada, the United States and the United Kingdom, these studies have confirmed that there is a correlation between smoking and the increase in the rate of deaths and disabilities as a result of certain illnesses.
- 4- The increase in the rate of deaths among smokers is due to the increase in the rate of falling sick with some illnesses mainly lung cancer, respiratory infections, heart diseases and the cardio vascular system in addition to other diseases such as cancers of the stomach, larynx, pharynx and the bladder.
- 5- Smokers put lesser effort than non smokers in the public service and daily work because they get sick a lot and stay in bed and because of the fatigue which affects smokers.
- 6- The studies have also showed that there is a strong relationship between smoking and bronchitis and the cough and phlegm spread between smokers as much as they smoke. This results in the narrowing of the air passages and hinders the exchange of gases in the lungs and all what that entails of serious results.
- 7- What these studies have confirmed that heart diseases increase among smokers more than others. Angina is the most common illnesses among smokers, and the risk increases among those who suffer high blood pressure, obesity, diabetes and higher cholesterol in the blood. That showed that the smoke from cigarettes leads to increased certain secretion of the adrenal gland and that leads to the viscosity of blood platelets which increases the risk of bleeding and the concentration of fats in the blood and increases the heart beats which causes sudden death. Smoking could lead to Atherosclerosis which causes disability or death as a result of the blood not reaching the brain or the feet. And one of the diseases related to smoking also is the cancer of the mouth, pharynx, bladder, stomach ulcers and tuberculosis.
- 8- One of the harms, which the study showed in relation to smoking, is that smoking causes weight loss in the new born when the mother smokes during the pregnancy. And can put the pregnant woman at risk of miscarriage. Smoking can also cause weight loss of the smokers
- 9- Is there enough in that to ring the alarm bells? Are the young men particularly aware of what awaits them of risk and harm if they think of smoking and started to smoke..
- 10- All relevant authorities and health institutions in particular have to act and try to protect people from these harms and not to leave the youth fall into it in pursuit of false imitation and chasing the illusion of false greatness.

## Arabic Post-test Questions for Text 1: (Smoking)

### إختبار المطالعة: النص الأول " التدخين "

#### الأسئلة

السؤال الأول: اكتب إجابتك في الفراغ المعطى

ذكر المؤلف بعض أضرار التدخين، اكتب اثنين منها:

١..... ٢.....

السؤال الثاني إلى التاسع اختر إجابة واحدة فقط:

السؤال الثاني: بناءً على النص: التدخين يسبب ارتفاع في عدد الوفيات لأنه:

١ . يستهلك كثيراً من الوقت

٢ . يسبب كثيراً من الأمراض الخطيرة والمميتة

٣ . يدمر النظام الغذائي

٤ . يستهلك كثيراً من المال

السؤال الثالث: معنى التقليد الزائف المقطع ١٠ ، هو:

١ . عمل شئ صحيح ٢ . عمل شئ من غير تفكير مسبق

٣ . العمل الخادع والسيئ ٤ . عمل شئ متميز وفريد

السؤال الرابع: الفكرة الرئيسية التي يركز عليها النص هي توضيح أن:

١ . التدخين يؤثر على البيئة

٢ . التدخين يسبب خسارة الأموال

٣ . التدخين يسبب كثيراً من الآثار السلبية في الصحة والمجتمع

٤ . التدخين يؤثر على الشباب فقط

السؤال الخامس: نستطيع أن نستنتج من النص أن:

١ . المدخنين أكثر إنتاجية مقارنة بغير المدخنين ٢ . المدخنين وغير المدخنين متساوون في العمل اليومي

٣ . التدخين لا يؤثر على العمل اليومي ٤ . غير المدخنين أكثر فعالية وإنتاجية في العمل اليومي مقارنة بالمدخنين

السؤال السادس: المؤلف في النص يوافق على أن:

١ . من الصعوبة أن نجد حلاً لمشكلة التدخين

٢ . من الممكن حل المشكلة عن طريق الجهد الفردي

٣ . العمل التعاوني مهم لحل هذه المشكلة

٤ . المحاولات لحل هذه المشكلة كانت ناجحة

السؤال السابع: اعتمد الكاتب في النص لإقناع القارئ على:

١. القصص      ٢. الدراسات والمقارنات بين الدول      ٣. التجربة الشخصية      ٤. الأرقام والإحصاءات

السؤال الثامن: هدف الكاتب من كتابة هذا المقال هو:

١. إمتاع القارئ      ٢. سرد قصة      ٣. إقناع القارئ بضرر التدخين      ٤. شرح كيفية وقاية المجتمع من خطر التدخين

السؤال التاسع: هل هذه العبارة: "أمراض القلب تزداد بين المدخنين عنها بين غيرهم" التي أوردها الكاتب في نص التدخين تمثل رأياً أم حقيقة؟

١. رأي

٢. حقيقة



### Translated Copy of Post-test Questions for Text 1: (Smoking)

**Question 1: Write your answer in the spaces provided**

---

**Question 1: The writer mentioned the harmful effects of smoking. Mention two of them:**

1. ....
2. ....

**Questions 2 to 9: Choose only one answer**

---

**Question 2: According to the passage, smoking causes a rise in deaths because it:**

- 1- Takes a lot of time
- 2- Causes a lot of dangerous and fatal diseases
- 3- Destroys the nutrition system
- 4- Costs a lot of money

---

**Question 3: The meaning of (False imitation) in paragraph 10 is:**

- 1- Doing something right
- 2- Doing something without thinking it through
- 3- Doing something bad and deceitful
- 4- Doing something distinguished and unique

---

**Question 4: The main idea emphasised in the passage explains that smoking:**

- 1- Impacts the environment
- 2- Wastes money
- 3- Has a lot of negative effects on health and society
- 4- Affects youth only

---

**Question 5: We can conclude from the passage that:**

- 1- Smokers are more productive than non-smokers
- 2- Smokers and non-smokers are the same in daily work
- 3- Smoking doesn't affect daily work
- 4- Non-smokers are more effective and productive in daily work compared with smokers

---

**Question 6: The writer in the passage suggests that:**

- 1- It is difficult to find solutions for the problem of smoking
- 2- It is possible to solve the problem of smoking through individual effort
- 3- Collaborative work is important in solving the problem of smoking
- 4- Attempts to solve the problem of smoking have been successful

---

**Question 7: To convince the reader, the writer in the passage relied on:**

- 1- Stories
- 2- Studies and comparisons between countries
- 3- Personal experience
- 4- Numbers and statistics

---

**Question 8: The aim of the writer in this article is to:**

- 1- Entertain the reader
- 2- Tell a story
- 3- Convince the reader of the harm caused by smoking
- 4- Explain the negative effects of smoking

---

**Question 9: Is the following statement from the passage “Smoking” an opinion or a fact? “ heart diseases increase among smokers more than others.”**

- 1- An opinion
- 2- A fact.

-----

## Post-test: Arabic Text 2 (لمن تصفو الحياة)

## النص الثاني: لمن تصفو الحياة

رقم  
المقطع  
١

لمن تصفو الحياة ؟

كثيرون يسألون أنفسهم هذا السؤال ، وكثيرون يعجزون عن الإجابة عنه ؛ لأنها تختلف باختلاف تحديد مفهوم السعادة والراحة ، الأمر الذي أصبح الاتفاق على تحديده رابع المستحيلات ، إن كانت لا تزال ثلاثة.

٢

قال قوم: إنَّ السعادة الصحة ، وقال آخرون: إنها الإيمان ، وقال غيرهم إنها في الطمأنينة. وهناك من يراها في الغنى. وأصحاب هذا الفهم تراهم يُذهبون لحظات السعادة الحقة في دنياهم، بحثاً وراء ما يسمونه وهماً بالسعادة.

٣

خلاف كبير ، قد تمضي أعمار وأجيال ، والناس لم يلتقوا على تحديد مفهومه ، وقديماً قال أحد الشعراء فيما نعتبره محاولة فردية ، للإجابة عن هذا التساؤل!

تصفو الحياة لجاهل أو غافل عما مضى عنها، وما يتوقع ولمن يغالط في الحقائق نفسه ويسومها طلب المحال، فتطمع

ولكن هل صحيح أن صفاء الحياة مقصور على الجهلة، والغافلين ، والمخادعين؟ أنا أشك كثيراً في هذا القول، وأحسب أن قائله كان واقعاً تحت تأثير ما نسميه بخيبة الأمل.

٤

وإذا كنا لم نصل بعد إلى تحديد مفهوم السعادة. فلننسا عن التأثير الواقع لفقدانها ، وكيف يعبر الناس شعورهم بها ، ولهفتهم عليها؟

قال أحد الشعراء قديماً إن الشكوى هي التعبير الصادق عن عدم الرضا بالواقع ، والقناعة به. ودفعه رأيه إلى ما لا ينتهي من الغزابة والدهشة ، لكثرة ما شاهد من شكوى الناس ، وتذمرهم من واقعهم ، حتى لقد حمله ما رآه إلى تساؤله الذي لا يخلو من طرافة:

كل من لاقب بشكوى دهره ليت شعري هذه الدنيا لمن

وهذا - في رأي - هو الآخر ، أحد ضحايا التشاؤم ، وخيبة الأمل ، وإلا فقد قرأنا من أقوال الجانب الآخر الأكثر تفاؤلاً ما يمكن أن نعتبره أقرب إلى الحقيقة من سابقه ، إذ قالوا: من لوازم الحياة ، التي لا تنتهي مطالبها عند حد ، بالقدر الذي تتمكن به من التعبير عن آمالك ومطامحك ؛ يكون نصيبك من اهتمام الناس وتقديرهم. وأمعنوا في تفاؤلهم ، فقالوا: إن صراخ الوليد ، ساعة وجوده، وبغدها؛ إنما هو إثبات لوجوده ، وجزء من مطالبته بحقه منها. وهذا التعبير فيه من الواقعية ، بقدر ما فيه من الطرافة.

٥

فالمناعب واقعة ؛ لأنها توجد مع الإنسان ، تهانده حيناً لكنها لا تفارقه. ولربما اعتبرا بعض المكافحين إحدى وسائل اللذة ؛ فالمكافح قد يتطرق السأم إلى قلبه ونفسه ، لو طال به الأمد، فلم يلتق بما يضاعف عزيمته ، ويقوي إقدامه ، من العقبات والمناعب؛ لأنها لمواهبه الدفاعية كالشخذ للمطواة.

٦

لكني أرى أن السعادة الحقة ، في الإيمان المطلق بالله، والتسليم بعظيم قدرته ، وشمول إحاطته وعلمه، وأن ما شاء كان ، وما لم يشأ لم يكن ، وأن الأمة لو اجتمعت على نفع ، أضر ، لم تقدر على بذل الأول ، أو دفع الثاني ؛ إلا بأمر الله وتقديره.

**Post-test: Translated copy of Text 2**

**(To whom life can be sheer happiness?)**

- 1- To whom life can be sheer happiness?  
Many people ask themselves this question, and many people can't find the answer for that question, because it varies with their understanding of the concepts of happiness and comfort. This has made reaching an agreement on that the fourth impossibility, if they are still three.
- 2- Some folk said: Happiness is good health, others said it is faith, some others said it is tranquility. Someone believes it is wealth. We find People who have this belief waste the moments of real happiness in life chasing what they delusionary call happiness.
- 3- Big argument, generations and years could pass and people haven't been able to identify its meaning. In the past one poet said:  
Life can be happy for an ignorant or oblivious  
To what has gone by and what is expected  
And to the person who argues against facts  
And asks for the impossible, so he becomes greedy  
But is it true that happiness is confined to the ignorant, oblivious and the deceitful? I very much doubt that. I believe that the one who said it was under the influence of what we call disappointment.
- 4- If we haven't been able to define the concept of happiness yet, let's wonder about the effects of losing it and how people express their feeling towards it and their eagerness for it?  
In the past one of the poets said that complaining is the true expression of dissatisfaction with the reality and not feeling contended with it. This opinion leads him to never ending astonishment and weirdness as a result of what he had heard of people complaints and their whimper of the reality. Until he wondered with some kind of novelty:  
Everyone I met complains about his life  
I wonder to whom does this life belong?  
And this, in an opinion- which is also the victim of pessimism and disappointment too, otherwise we have read sayings of the other opinion which is more optimistic than we consider close to reality when they said: One of the necessities of life, whose demands are endless, to the extent where you can explain your hopes and ambitions you will have your share of people's interest and respect. They went further with their optimism so they said: The crying of the newborn at time of his birth and afterwards is a proof of his existence, and a part of his demand for his rights in it. This expression has as much reality as novelty.
- 5- Hardship is befallen because it exists with the human being. It gives him a rest sometimes but it doesn't leave him. Some of those strugglers probably consider it one of the ways for pleasure. Despair can reach a struggler's heart and mind even after a long while, he would not find of obstacles of what doubles his enthusiasm and strengthen his prowess because it is like the sharpening of a knife for his defensive talents.
- 6- But I feel the real happiness is the absolute faith in God, and surrendering to his great power, and the inclusiveness of his awareness and knowledge, whichever he wants will happen and whichever he doesn't want will never take place and that even if everyone puts all their effort for a good or an evil they wouldn't achieve the first or prevent the second unless they have God's will and predestination.

## Arabic Post-test Questions for Text 2: (لمن تصفو الحياة)

### النص الثاني: لمن تصفو الحياة

#### الأسئلة

#### السؤال الأول: اكتب إجابتك في الفراغ المعطى

ذكر المؤلف إن السبب الرئيس للسعادة الحقة هو:

١. ....

#### السؤال الثاني إلى الثامن اختر إجابة واحدة فقط:

#### السؤال الثاني: ذكر الكاتب في النص إنه:

١. لا يوجد خلاف بين الناس في مفهوم السعادة

٢. يوجد خلاف كبير بين الناس في تحديد مفهوم السعادة

٣. يتفق الناس أن السعادة في الغنى

٤. يتفق الناس أن السعادة في الصحة

#### السؤال الثالث: يقصد الكاتب بكلمة "صفاء الحياة" في المقطع ٣:

١. الحصول على السعادة    ٢. مواجهة المتاعب    ٣. تحقق الأهداف    ٤. خيبة الأمل

#### السؤال الرابع: الهدف من كتابة المقطع ٦ هو:

١. تحديد رأي المؤلف في مفهوم السعادة

٢. تحديد رأي الناس في مفهوم السعادة

٣. بيان أن السعادة لا يمكن الحصول عليها

٤. تحديد المفهوم الخاطئ للسعادة

#### السؤال الخامس: نستنتج من النص أن الحصول على السعادة:

١. يعتمد على مفهوم الشخص للسعادة

٢. تعتمد على مقدار ما يملكه الشخص من مال

٣. لا تتأثر بمفهوم الشخص للسعادة

٤. يعتمد على الصحة

#### السؤال السادس: يرى الكاتب في المقطع ٤ أن الشكوى وخبية الأمل هي نتيجة:

١. لفقدان السعادة ومعرفة ماهيتها.

٢. عدم الحصول على التقدير من الناس

٣. وجود المتاعب في الحياة

٤. الفقر.

السؤال السابع: كل من لاقيت يشكو دهره ليت شعري هذه الدنيا لمن؟

العاطفة السائدة في هذا البيت المقطع الرابع هي:

١. التشاؤم    ٢. التفاؤل    ٣. الفرح    ٤. الغضب

السؤال الثامن: هل هذه العبارة: "لأنها تختلف باختلاف تحديدهم لمفهوم السعادة والراحة" تمثل رأياً أم حقيقة؟

١. رأي

٢. حقيقة

## Translated Copy of Post-test Questions for Text 2: Who can have a happy life?

### Question 1: Write your answer in the spaces provided

---

**Question 1: The writer mentioned that the main reason for true happiness is:**

1. ....

### Questions 2 to 8: Choose only one answer

---

**Question 2: The writer said in the passage that:**

- 1- There is no difference between people in the way they understand happiness
- 2- There is a big difference between people in the way they identify happiness
- 3- People agree that happiness is being wealthy
- 4- People agree that happiness is being healthy

---

**Question 3: The writer means by the words (صفاء الحياة) in paragraph 3:**

- 1- Finding happiness
- 2- Facing problems
- 3- Achieving goals
- 4- Disappointment

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**Question 4: The aim of paragraph 6 is to:**

- 1- Identify the writer's opinion of the meaning of happiness
- 2- Identify people's opinion of the meaning of happiness
- 3- State that it is impossible to achieve happiness
- 4- Identify the wrong concept of happiness

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**Question 5: We conclude from the passage that achieving happiness:**

- 1- Depends on a person's understanding of happiness
- 2- Depends on the amount of money a person has
- 3- Is not affected by the way a person understands happiness
- 4- Depends on health

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**Question 6: In paragraph 4 the writer thinks that complaints and disappointments are the results of:**

- 1- Lack of happiness and understanding its meaning
- 2- Not getting appreciation from other people
- 3- Facing difficulties in life
- 4- Poverty

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**Question 7: كل من لاقيت يشكو دهره ليت شعري هذه الدنيا لمن؟**

**The overwhelming sentiment in this verse of poetry (paragraph 4) is:**

- 1- Pessimism
- 2- Optimism
- 3- Joy
- 4- Anger

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**Question 8: Is the following statement from this passage “Because it varies with their understanding of the concepts of happiness and comfort..” an opinion or a fact?**

- 1- An opinion
- 2- A fact

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### **Appendix C: Interview Questions for Students (English Translation)**

1. How did you feel about learning with online discussion?
2. Do you think that learning by collaborating with others was effective? Could you explain?
3. How can blending online discussion with face-to-face instruction be different from traditional classroom instruction?
4. How does online discussion affect your reading comprehension?
5. What are the impacts of online discussion on your participation in the class discussion?
6. What did you like about online discussion?
7. What are the difficulties you faced with online discussion?
8. How does having a flexible time and place to participate help for learning?
9. Do you agree that sharing information helped you understand the topics? Please explain.
10. How does group discussion assist your comprehension of the text?
11. How do you describe the role of the teacher in facilitating learning through online discussion?
12. Do you have comments or suggestions? If yes, could you please provide?

## **Students' Interview Questions: Arabic Version**

### **أسئلة المقابلة**

1. كيف تشعر حول التعلم عن طريق المحادثة الإلكترونية؟
2. هل تشعر أن التعلم عن طريق التعاون مع الآخرين فعال؟ هل من الممكن أن تشرح؟
3. ما الفرق بين دمج المحادثة الإلكترونية في الفصول التقليدية, وطريقة الدراسة التقليدية في الفصل؟
4. كيف تؤثر المحادثة الإلكترونية على مهارات الاستيعاب القرائي عندك؟
5. ما تأثير المحادثة الإلكترونية على مشاركتك خلال المناقشة في الفصل؟
6. ماذا أحببت في المحادثة الإلكترونية؟
7. ما الصعوبات التي واجهتها؟
8. كيف تفيد المرونة في الوقت والمكان في المشاركة للتعلم؟
9. هل تعتقد أن مشاركة المعلومات مع الآخرين ساعدتك في فهم الموضوعات؟ اشرح؟
10. كيف تساعد المحادثة الإلكترونية في استيعاب النص؟
11. كيف تشرح دور المعلم في تسهيل التعلم خلال المحادثة الإلكترونية؟
12. هل لديك ملاحظات أو تعليقات؟ إذا كان لديك ملاحظات ممكن تذكرها؟

## **Appendix D: Interview Questions for Teachers (English Translation)**

1. How long have you been teaching?
2. What are your teaching qualifications?
3. What is your content area of teaching?
4. What grade in secondary school do you teach?
5. Do you have experience with using the Internet and technology in your life and teaching? If yes, what are experiences do you have?
6. From your observation, did you think students were satisfied using online discussion?
7. How did you feel about teaching with online discussion? Are you satisfied with it?
8. What do you think are the advantages of using online discussion for teaching reading to students? Levels of comprehension?
9. Does online discussion support students' reading comprehension strategies? If yes, could you please describe?
10. Do you think students' participation was improved by using online discussion? If yes, could you explain how?
11. From your observation in the classroom, do you feel students' attitudes were changed by the students' participation in online classes?
12. Do you think students were active in face-to-face discussion after participating in online learning? Explain please.
13. How do you describe your role in online discussion?
14. What do you think are the difficulties in applying online discussion in teaching reading?
15. How could these challenges be solved?
16. Do you have any recommendations for applying online lessons? Please give examples.

## **Teachers' Interview Questions: Arabic Version**

### **أسئلة المقابلة**

1. منذ متى وأنت تعمل في التدريس؟
2. ما مؤهلاتك الدراسية؟
3. ما تخصصك في التدريس؟
4. ما المرحلة التي تدرسها في المرحلة الثانوية؟
5. هل لديك خبرة في استخدام الكمبيوتر والإنترنت في الحياة؟ ما هذه الخبرات؟
6. من ملاحظتك هل تعتقد الطلاب كانوا راضين باستخدام المحادثة الإلكترونية؟
7. كيف تشعر حول التدريس مع استخدام المحادثة الإلكترونية؟ هل أنت راضٍ معها؟
8. ماذا تعتقد حول فوائد استخدام المحادثة الإلكترونية لتدريس القراءة؟
9. هل تعتقد أن استخدام المحادثة الإلكترونية حسنت مهارات الإستيعاب عند الطلاب؟ إذا كنت تعتقد ذلك؟ اشرح؟
10. هل تعتقد مشاركة الطلاب تحسنت باستخدام المحادثة الإلكترونية؟
11. من ملاحظتك في الفصل، هل تشعر أن اتجاهات الطلاب نحو القراءة تغيرت بسبب مشاركتهم في المحادثة الإلكترونية؟
12. هل تعتقد أن الطلاب كانوا نشيطين وفعالين في الفصل بعد المشاركة في المحادثة الإلكترونية؟
13. كيف تشرح دورك في المحادثة الإلكترونية؟
14. ماذا تعتقد حول الصعوبات في تطبيق المحادثة الإلكترونية في الفصل؟
15. كيف يمكن حل هذه الصعوبات؟
16. هل لديك أية تعليقات؟

**Appendix E: Overview of AOD Syllabus: Topics, Types of Texts, Focus of the Discussions and Example Discussion Questions**

<b>Discussions</b>	<b>Topics</b>	<b>Type of Texts</b>	<b>Focus of the Discussion</b>	<b>Examples Discussion Questions</b>
<b>1</b>	Happiness	Expository	Drawing conclusion	“You have learned about happiness this week: write three inferences you can take from the text about happiness.”
<b>2</b>	Ebn Taimiah	Biography	Literal	“According to the text, what are the main characteristics of Ebn Taimiah?”
<b>3</b>	Fingerprints	Expository	Inferring text ideas	“After reading the text, what is the main idea of the text, and what are the sub-ideas that are discussed in the text?”
<b>4</b>	Fingerprints	Expository	Evaluating text purposes	“What is the main purpose of writing this text? 1) To entertain the reader; 2) To warn the reader; 3) To inform the reader about the benefits of using fingerprints; or 4) Other (please identify). Use examples from the text to support your answer.”
<b>5</b>	Loyalty	Story	Drawing conclusion	“What are the important inferences and benefits you gained from this story?”
<b>6</b>	From the roots of unity among Gulf citizens	Expository	Literal	“What are the main benefits of the Gulf location?”
<b>7</b>	From the roots of unity among Gulf citizens	Expository	Inferring text ideas	“What are the main and sub-ideas that are discussed in the Gulf Countries text? Mention first the main idea and after that list the sub-ideas.
<b>8</b>	A shiny page of our scientific history	Short story	Inferring word meaning	“What does word (bright story) mean in this text? Use the context of this word to answer the question and use this word in a new sentence.

Discussions	Topics	Type of Texts	Focus of the Discussion	Examples Discussion Questions
9	A shiny page of our scientific history	Short story	Evaluation of text purpose, evidence (facts and opinions), author's feeling	<p>“What is the main purpose of the author in writing the text? To entertain, warn, inform or persuade? What evidence was used by the author to support this purpose? – Using non-Arab scientists' opinions; - Listing some inventions that were created by Arabs; - Both answers; – Other evidence (please identify)”. Does the author in this text provide facts or opinions?</p> <p>“2. How do you describe the author's feeling in this text: – Joy; - Anger; – Fear; – Proud.”</p>
10	King Faisal describes his great father	Biography	Inferring word meaning	“What did the author mean by the words “ <u>patience</u> , <u>أناة</u> ”? Use this phrase in a sentence.”
11	King Faisal describes his great father	Biography	Literal	“What are the main characteristics of King Faisal that were mentioned in the text?”
12	King Faisal describes his great father	Biography	Evaluation of text: Author's purpose and evidence.	“What is the author's purpose of writing the text? How did the author support his purpose in this text? Give an example. How does this evidence support the author's ideas?”

## **Appendix F: Examples of Lessons Design, Discussions and Teachers' Plan:**

### **Example 1: Lesson Design: Fingerprints Text (Week 2, Discussions 3)**

Teachers and the researcher were involved in collaborative lesson plan design and implementation. The topic was “fingerprints”, which was an expository text. This text described the history of fingerprints, their development, application and advantages.

#### **Face-to-Face Phase**

For this study both control (FTF) and experimental (BL) groups attended face-to-face (FTF) reading classes. After this traditional class, students in the experimental group were involved in online small group discussion forums during the week. In the FTF classes, the main aims were to activate students' prior knowledge, understanding the main ideas of the text, understanding word meaning as well as understanding comprehension strategies, and reading aloud to help students read correctly. This section followed some processes, including:

- 1) The teacher started activating students' knowledge about the text by asking some questions that focused on what students already knew about the topic. For example: what is a fingerprint? what are the benefits of using fingerprints? In this part of the class, some students participated by answering the questions.
- 2) In the second part of the class, the teacher asked students to read silently, think about the main idea of the text, and highlight any difficult words that they did not understand. After silent reading, the teacher asked students about the main idea of the text. The teacher then asked students if they encountered any difficult words they did not understand. If so, the teacher asked students to write them on the board and encouraged other students to use them in a sentence and suggest the meaning of the word. The teacher briefly explained some comprehension strategies related to the text, such as main ideas and sub-ideas.
- 3) In the third part of face-to-face classes, the teacher asked some questions about the text, focusing on the text ideas and the main conclusions that students drew from the text. In this phase, the teacher asked questions and some students answered the questions.
- 4) In the final part of the class, the teacher read the text aloud and chose some students to also read it aloud. The teacher focused in this way on correcting fluency and reading.

The previous steps are used in traditional FTF reading classes as the main instruction and teaching process. After these FTF classes, students in the FTF group were given some questions that focused on comprehension strategies to be completed as homework, while the BL group were asked to involve in AODs during and after class time, as explained below.

### **AOD Phase (Experimental Group)**

Thirty-two students were assigned purposively into five small experimental groups as discussed in the Chapter 4. The main aim of this phase was that students involve in social interaction and discussion about the text within their small groups. In the discussion, students were required to actively collaborate with others, answering the text, reading others' posts, supporting others' participation, sharing ideas and providing comments and feedback.

The teacher collaborated with the researcher in this phase of planning, implementing and facilitating the discussion activities. The teacher posed questions about the text after FTF classes. In addition, the teacher provided instructions, examples and appropriate support and feedback in these classes.

Teachers and students in the online discussion forums followed some instructions and processes:

1. The teacher collaborated with the researcher to plan the activities by using a plan sheet. The topic was identified (*e.g.*, fingerprints), and a set text chosen that aimed to describe the history of fingerprints, historical developments, applications and benefits of using this method in different aspects of life.

**Goal:** The main goal of this online activity was to assist students to understand the main ideas and sub-ideas of the text by being involved in online small group discussion in which they were required to share and discuss ideas within their group.

**Objectives:** Given online discussion activities, students should have been able to:

- Identify the main idea of the text.
- Identify the sub-ideas discussed in the text.
- Post an answer to the question in the online discussion.
- Read others students' posts in the small group.
- Discuss and comment on others' posts.
- Pose questions.
- Collaborate actively with peers in small group discussion.

Teachers also identified objectives for participation rates and duration:

- Posting one to two answers.
  - Posting one to three comments.
  - Posing one to two questions.
  - Time limit of one discussion (one 35-minute session during school time and three days outside school time).
2. Implementation: after finishing the FTF reading class, the teacher encouraged students to access the website, read the question, and encouraged them to participate in discussion with others as per instructions.



3. The teacher posed the question about the text on the same day, focusing on one level of reading comprehension per week (*e.g.*, understanding the main idea and sub-ideas of the text). For example,:

**“After reading the text, what is the main idea of the text and what are the sub-ideas that are discussed in the text?”**

4. The teacher also explained the aims and focus of the discussion in each week, expectations, and offered instructions on how to participate, which were:
  - a) Read the example given by the teacher on how to identify the main idea of the text. (Teachers offered an example on how to identify the main and sub-ideas.)
  - b) Answer the question with no more than two answers.
  - c) Read your group’s posts about the text.
  - d) Discuss the answers provided within the group, for example, elaborating others’ answers, supporting others’ answers by providing examples or evidence from the text, arguing about these posts or commenting. You should write no more than three posts (comments) in each topic per discussion.
  - e) Pose one to two questions about these posts in your group.
  - f) You have three days to complete these activities.
5. Students were then involved in discussion over 35 minutes during school time and three days outside school time. Discussions centered on the set text, focusing on the main and sub-ideas of the text following the suggested instructions by the teacher.
6. Every group was allowed to participate only in their group forum but they could read other groups’ discussions.
7. The teacher provided some feedback at the end of the week and in the next FTF class.

**Example 2: Reading Activities**

<b>Instruction</b>		
<b>Phase</b>	<b>Activities (teachers)</b>	<b>Activities (students)</b>
Phase 1: FTF reading class instruction	1. Introduce the text 2. <b>Activate</b> prior knowledge 3. Read the text 4. Ask questions about the text 5. Explain some comprehension strategies	1. Read the text 2. Participate in the class activities 3. Answer the questions about the text as homework.
Phase 2: Online discussion (small group)	1. <b>Pose</b> the question about the text studied in the last class 2. Give <b>instructions</b> and explain the tasks 3. Give an <b>example</b> and explain how to answer the question 4. Provide <b>feedback</b> and comments on students' participation	1. <b>Answer</b> the question with no more than two answers 2. <b>Read</b> others' comments and answers in their groups 3. Provide no more than three <b>comments</b> on the posted messages in the same group 4. <b>Read</b> others' comments and posts 5. <b>Pose</b> one to two questions about the text

**Example 3: AOD Instructions**

<b>Instruction</b>	<b>Description</b>
1. Activity focus and goal	The main goals of this discussion's activity are: 1) Identifying the main idea of the text 2) Understanding and writing the sub-ideas, which have been discussed in the text
2. Read the text again and read the example attached with this discussion's activity	You are required to read the (fingerprints) text again from the textbooks. There is one example written by the teacher in the Students' Guide Forum; this example will help you to understand how to answer the question
3. Read the question attached about fingerprints	The teacher has posed a question about this topic, which is "After reading the text, what is the main idea of the text, and what are the sub-ideas that are discussed in the text?" Read this question carefully and read the text again to answer it
4. Answer the question posed by the teacher in your group forum	Access your group forum and write your answer to this question and post in your forum to be shared with others. Your answer should include the main idea and other sub-ideas mentioned in the text
5. Read others students' posts in your group	Open other's posts in your group and read no less than four posts; think about these posts
6. Discuss other's posts (e.g., elaborate, share ideas, support, evaluate, give feedback or suggestions, ask questions) - Your comment should be related to this week's focus and question	After reading and thinking about other's posts in your group, discuss these. For example: - Elaborate, add more information, explain or share ideas about the answer - Support by giving examples or evidence from the text - Ask a question - Provide feedback or a suggestion about these answers - Agree or disagree with these answers
7. Pose <u>one or two questions</u> either about the text or students' posts	Ask questions about the (fingerprints) text, or questions about students' posts
8. You have three days to complete this activity	After posing this question in the forum, you can participate for three days until the next class
9. If you face any difficulty contact your teacher via email or see at school	If you encounter any problems (e.g., Internet connection, computer, accessing the website, difficulty of participation), you can ask for help by contacting your teacher via email or personally at school

**Example 4: Teacher Plan Sheet**

<b>Discussion (D)</b>	<b>Details</b>
Discussion	D3
Topic	Fingerprints
Focus (reading comprehension)	Text main idea plus sub-ideas
Goal	To help students identify the main idea and sub-ideas discussed in the fingerprints text by interacting, discussing and sharing ideas in online small group discussion
Time and place	Face-to-face class, a session of 35 minutes during school time, and three days outside school time for online discussion forum
Objectives	<p>Given online discussion activities, students should be able to:</p> <ul style="list-style-type: none"> <li>- Identify the main idea of the text</li> <li>- Identify the sub-ideas discussed in the text</li> <li>- Answer the question posted in the online discussion</li> <li>- Read other students' posts in the small group discussion</li> <li>- Discuss and comment on others' posts (<i>e.g.</i>, elaborate, support, evaluate and give feedback)</li> <li>- Pose questions about the text</li> </ul>
Materials and tools	Arabic reading textbooks and online discussion forums
Instructions and process (Teachers)	<ol style="list-style-type: none"> <li>1. Pose the question about the text studied in the last class: "After reading the text, what is the main idea of the text, and what are the sub-ideas that are discussed in the text?"</li> <li>2. Give instructions and explain the tasks (instruction sheet)</li> <li>3. Give an example and explain how to answer the question (example sheet)</li> <li>4. Provide feedback, and comment on students' participation by the end of the week</li> </ol>
Instructions (Students)	<ol style="list-style-type: none"> <li>1. Identify the main idea of the text</li> <li>2. Identify the sub-ideas discussed in the text</li> <li>3. Write one or two answers to the question in online discussion</li> <li>4. Read others students' posts in the small group discussion</li> <li>5. Discuss and comment (no more than three posts) on others' posts (<i>e.g.</i>, elaborate, support, evaluate and give feedback)</li> <li>6. Pose one to two questions about the text</li> </ol>
Facilitation support	<p>Teacher support:</p> <ol style="list-style-type: none"> <li>1. Provide technical support</li> <li>2. Encourage students to participate in face-to-face and online discussion</li> <li>3. Provide clear instructions</li> <li>4. Provide one example</li> <li>5. Give feedback by the end of the week about the discussion and participation</li> </ol>
Evaluation	<ol style="list-style-type: none"> <li>1. Teacher gives feedback about students' posts by the end of the discussion</li> <li>2. Teacher encourages students who do not post during the week</li> <li>3. Teacher gives feedback in next FTF class</li> </ol>

### Appendix G: Coding Schemes for Analysing Students' Interaction Themes

Category	Description	Indicators	Example
1 <b>Answer Question</b>	Statements that provide answers to information-seeking questions. Involves three types of comprehension: literal, inferential, and evaluative	(a) Literal answers (b) Inferential answers (c) Evaluative answers	(a) "The characters mentioned in the story are..." (b) "The main idea of this week's text is..." "I understood from this text that..." (c) "The author's purpose in this text is that..." "The following statement is fact..."
2 <b>Discuss Question</b>	Questions that students ask to start a new discussion or dialogue	(a) Asking peers about their experiences (b) Asking peers for their perspectives and opinions about some issues related to the text	(a) "Who visited any Gulf country; how was it?" (b) "I have a question for you, how can we achieve happiness in our life?"
3 <b>Support-seeking Question</b>	Inquiries about strategies; seeking feedback; clarification about strategies; or support about participation and technical issues	(a) Seeking explanation of the strategy (b) Seeking examples of the strategy (c) Asking how to identify the answer (strategy) (d) Asking about technical problems (e) Seeking feedback	(a) "What does the main idea mean? please explain it to me?" (b) "Can anyone give me an example of the sub-idea in this text?" (c) "How can I find the facts in the text?" "I did not understand the difference between facts and opinion; anyone know?" (d) "I have a problem finding the weekly example in the forum; could you help me?" (e) "Can anyone respond to my answer and tell me if is it correct or not?"
4 <b>Agreement and Disagreement</b>	Students' comments that involve agreeing or disagreeing about others' answers or posts	(a) Agreeing with others about an answer or opinion (b) Disagreeing with others about an answer or opinion	(a) "I agree with you." (b) "I disagree with this answer."

5	<b>Scaffolding Strategy</b>	Students' guidance and support to other students that focus on assisting others' understanding of the comprehension strategies	(a) Explanation of the strategy (b) Giving example of the strategy (c) Referring to the students' forum guide (d) Providing feedback about the strategy	(a) "The main idea is..." (b) "An example of the sub-idea in this text is..." (c) "You need to read the students' forum guide to understand the text." (d) "This answer is not sub-idea, it is the main idea in the text."
6	<b>Encouragement</b>	Students' support in the discussion and dialogue: demonstrating, encouraging, thanking, reinforcing and acknowledging others' participation	(a) Encouraging by thanking others for their messages (b) Encouraging by thanking others for their answers (c) Acknowledging others' answers (d) Praising other posts or answers	(a) "Thank you for your message." (b) "Thank you for your answers." (c) "Your answer helped me to understand the text this week." (d) "Your answer is a good answer." "Excellent answer."
8	<b>Reflection</b>	Statements in which students reflect on their learning	(a) Reflecting on their learning (understanding the topic) (b) Reflecting on their discussion skills	(a) "This week's discussion helped me understand the topic." (b) "This discussion made me learn how to discuss with others."
9	<b>Off-task (Social Cues)</b>	Statements that are not related to the topic under discussion (reading), such as social cues, technical issues or personal interests	(a) Social cues (greeting) (b) Expression of feeling (c) Personal interest, life	(a) "Hello." (b) "I'm so excited. I'm going this week to watch a match." (c) "Did you watch the match yesterday?"

**- Adapted from:**

1. Zhu's (1996) coding scheme: Zhu, E. (1996). *Meaning negotiation, knowledge construction, and mentoring in distance learning course*. Paper presented at the national convention of the Association for Educational Communications and Technology, Indianapolis.
2. Northrup's (2007) study: Northrup, C. (2007). *Investigating the use of technology, ideas, and instructional strategies in an online literature discussion group*. (Education specialist in human services, learning resources, Unpublished Ph.D thesis), University of Central Missouri, USA. Available from ProQuest Dissertations & Theses Full Text (UMI No. 1441870).
3. Categories and sub-categories that emerged from students' discussion.

**Appendix H: Coding Schemes for Analysing Teaching Presence in AODs**

<b>Category</b>	<b>Indictors</b>	<b>Examples</b>
<b>1 Design, Organisation</b>	Setting curriculum (aims, goals, topics) Designing methods (group structure, student tasks, participation limit) Establishing time parameters (time of participation) Establishing “netiquette” (participation limits, length) Technical supports (access, password, forum structure, navigating the forum)	“This week we will be discussing...” “This week we will focus on...” “I’m going to divide you into groups and you will debate...” “Your task this week is to answer the question, comment.” “Please post a message by Friday.” “You are required to discuss in the forum until Tuesday next week.” “Keep your message short.” “I noticed some messages are long and not focused on the topic.” “If you would like to change your passport you need to...”
<b>2 Discourse Facilitation</b>	Encouraging, thanking, acknowledging, reinforcing students’ contributions Identifying areas of agreement and disagreement Setting climate for learning Drawing on participants, promoting discussion Seeking to reach understanding Assessing the efficacy of the process Social cues (greeting, emotion, feelings, personal interest, symbol icons)	“Thank you for your answer.” “Good comment.” “I think S1 and S2 agreed about this issue that you have discussed; what do you think?” “Don’t be shy to discuss, comment, everyone is encouraged to participate in this forum.” “Is there any student who wants to comment on this answer?” “I think you and S4 are sharing the same idea that the main idea of the text is...” “We need to focus on the topic; the three previous comments were off-topic.” “Hello everyone.” “I’m happy to see this type of discussion.”

<b>3</b>	<b>Instruction</b>	Presenting content/questions	“The text of this week is about...” “This week’s question is...”
		Explicit explanation of the strategy	“The main idea is the important idea of the text.”
		Modelling the strategy	“I read this week’s text, and I’m looking for the main idea; I read the title and the first paragraph...”
		Diagnosing any misconceptions	“I noticed there is confusion between inference and literal levels.”
		Confirming understanding by giving feedback and assessment	“Your answer is a good example of making inference from the text.”
		Focusing the discussion on a specific issue	“We are focusing this week on making inference from the text not literal level.”
		Injecting knowledge from diverse sources	“There is a good book about this topic in the school library; if you would like to borrow it please let me know.”

**- Adapted from:**

1. Anderson and colleagues’ (2001) coding scheme of teaching presence: Anderson, T., Rouke, L., Garrison, R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks*, 5(2), 1-17.

2. Categories and sub-categories that emerged from teachers’ discussion.



## Appendix I: Coding Schemes for Analysing Reading Comprehension Levels

Comprehension Category	Definition	Indicators
<b>1 Literal</b>	Focuses on retelling or recalling the facts, ideas or information that are stated directly and explicitly in the text. (Information is provided in the text)	- Recalling, recognising, locating, restating facts and details such as names of characters, events, settings and dates
<b>2 Inferential</b>	Refers to meanings that are inferred and implied from the text, but not directly or explicitly mentioned in the text. (Inferences made based on information in the text and connecting the information in the text to experiences and prior knowledge)	- Identifying the main ideas that are not presented in the text - Inferring main ideas - Cause and effect - Comparison - Predicting outcomes - Making connections between the text and prior knowledge - Drawing conclusions - Inferring word meanings
<b>3 Evaluation</b>	Making critical judgments about the text, based on the information and reader's own opinion	- Distinguishing between facts and opinion - Distinguishing between reality and fantasy - Understanding the author's tone and voice - Understanding the author's purpose in writing the passage - Determining if the information is accurate - Gauging if there is sufficient evidence to draw the conclusion - Giving an opinion that agrees or disagrees

- Adapted from:

1. Barrett's (1968) taxonomy of reading comprehension levels: As cited in Pearson, P. D., & Johnson, D. D. (1972). *Teaching Reading Comprehension*. New York: Holt, Rinehart, Winston.

2. Other existing comprehension taxonomies and categorisations as discussed in Chapter 2, 3 and 4.

## Appendix J: Analysis of Overall Comprehension Scores: Assumptions, ANCOVA and Non-parametric Tests

**Normality Assumption:** To test the normality of data across groups Shapiro-Wilk statistics was applied with all levels. This test is widely used with small samples. This test has more power to detect differences from normality than Kolmogorov-Smirnov test. If the test is significant (Sig. in the SPSS table is less than 0.05) then the scores are significantly different from normal distribution and normality assumption is violated (Field, 2009, p. 148). For example, for **overall scores** shown below all the variables were normally distributed, ( $p > 0.05$ ).

### Tests of Normality of Overall Scores

Tests	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Total pre-test	Control (FTF) group	0.970	32	0.497
	Experimental (BL) group	0.976	32	0.667
Total post-test	Control (FTF) group	0.957	32	0.221
	Experimental (BL) group	0.952	32	0.166

\* This is a lower bound of the true significance. <sup>a</sup> Lilliefors significance correction.

**Homogeneity of Variance Assumption:** Leven's test was used to assess this assumption. If this test is significant (Sig. in the SPSS table is less than 0.05) then the variances are significantly different and normality assumption violated.

For example, for overall post-test scores shown below, ( $p > 0.05$ ), therefore the assumption of Homogeneity is met for this variable.

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent variable: Overall post-test scores

F	df1	df2	Sig.
2.678	1	62	0.107

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

<sup>a</sup> Design: Intercept + Overall pre-test scores + Groups.

**ANCOVA for Overall Comprehension Post-test Scores**

<b>Source</b>	<b><i>SS</i></b>	<b><i>df</i></b>	<b><i>MS</i></b>	<b><i>F</i></b>	<b><i>p</i></b>	<b><math>\eta p^2</math></b>
Corrected Model	115.815	2	57.625	15.404	0.000	0.336
Intercept	117.937	1	117.937	31.527	0.000	0.341
Pre-reading	99.249	1	99.249	26.532	0.000*	0.303
Experiment	8.859	1	8.859	2.368	0.129	0.037
Error	228.188	61	3.741			
Total	10494.000	64				
Corrected Total	343.438	63				

*Note.* Dependent variable: Overall post-reading scores.

<sup>a</sup> R Squared = 0.336 (Adjusted R Squared = 0.314). \* $p < 0.05$ .

## Appendix K: Analysis of Literal Comprehension Scores: Assumptions, ANCOVA and Non-parametric Tests

### Tests of Normality of Literal Scores

Tests	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pre-test	Control (FTF) group	0.865	32	0.001
	Experimental (BL) group	0.874	32	0.001
Post-test	Control (FTF) group	0.738	32	0.000
	Experimental (BL) group	0.684	32	0.000

<sup>a</sup> Lilliefors significance correction.

- For Literal scores all the variables were not normally distributed ( $p < 0.05$ ). Although, the normality is violated in this case, ANCOVA was used to examine the effects of BL on students' literal comprehension because ANCOVA is considered robust to the violation of this assumption, especially with equal size sample, as is the case in this study. The non-parametric Mann-Whitney test was also applied with these variables as shown below and the result indicates that there was no significant difference between both groups in post-literal scores, confirming the ANCOVA result.

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable: Literal post-test scores

<i>F</i>	<i>df1</i>	<i>df2</i>	<b>Sig.</b>
3.763	1	62	0.057

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

<sup>a</sup> Design: Intercept + Literal pre-tests scores + Groups.

- For Literal post-test scores, ( $p > 0.05$ ), therefore the assumption of Homogeneity is met.

### ANCOVA for Total of Students' Literal Comprehension Post-test Scores

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta p^2$
Corrected model	6.147	2	3.073	5.666	.006	.157
Intercept	53.444	1	53.444	98.528	0.000	0.618
Pre-reading	5.756	1	5.756	10.612	0.002*	0.148
Experiment	0.269	1	0.269	0.496	0.484	0.008
Error	33.088	61	0.542			
Total	1273.000	64				
Corrected Total	39.234	63				

Note. Dependent variable: total post-reading scores.

<sup>a</sup> R Squared = 0.157 (Adjusted R Squared = 0.129). \* $p < 0.05$ .

**Non-parametric Tests: Mann-Whitney Tests: Literal Comprehension Scores**

		<b>Ranks</b>		
	<b>Group</b>	<b><i>n</i></b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
<b>Literal Pre-tests</b>	Control (FTF) group	32	32.14	1028.50
	Experimental (BL) group	32	32.86	1051.50
	<b>Total</b>	64		
<b>Literal Post-tests</b>	Control (FTF) group	32	30.86	987.50
	Experimental (BL) group	32	34.14	1092.50
	<b>Total</b>	64		

<b>Test Statistics<sup>a</sup></b>		
	<b>Pre-test (Literal)</b>	<b>Post-test (Literal)</b>
Mann-Whitney <i>U</i>	500.500	459.500
Wilcoxon <i>W</i>	1028.500	987.500
<i>Z</i>	-0.162	-0.794
Asymp. Sig. (2-tailed)	0.871	0.427

<sup>a</sup> Grouping variable: Group.

**Non-parametric Tests: Wilcoxon Signed Ranks Tests: Comparison Between Pre-test and Post-test Scores for Literal Comprehension**

<b>Group</b>			<b><i>n</i></b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
<b>FTF</b>	Post-Literal – Pre-Literal	Negative Ranks	5 <sup>a</sup>	8.80	44.00
		Positive Ranks	16 <sup>b</sup>	11.69	187.00
		Ties	11 <sup>c</sup>		
		Total	32		
<b>BL</b>	Post-Literal – Pre-Literal	Negative Ranks	2 <sup>a</sup>	9.00	18.00
		Positive Ranks	19 <sup>b</sup>	11.21	213.00
		Ties	11 <sup>c</sup>		
		Total	32		

a. Post-Literal < Pre-Literal.

b. Post-Literal > Pre-Literal.

c. Post-Literal = Pre-Literal.

**Test Statistics: Wilcoxon Signed Ranks Tests: Comparison Between Pre-test and Post-test Scores for Literal Comprehension**

<b>Group</b>		<b>Post-Literal – Pre-Literal</b>
<b>FTF</b>	<i>z</i>	–2.561 <sup>a</sup>
	Asymp. Sign. (2-tailed)	0.010
<b>BL</b>	<i>z</i>	–3.620 <sup>a</sup>
	Asymp. Sign. (2-tailed)	0.000

a. Based on negative ranks.

## Appendix L: Inferential Comprehension Scores: Assumptions, ANCOVA and Non-parametric Tests

### Tests of Normality of Inferential Scores

Tests	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pre-test	Control (FTF) group	0.958	32	0.246
	Experimental (BL) group	0.941	32	0.081
Post-test	Control (FTF) group	0.936	32	0.059
	Experimental (BL) group	0.940	32	0.075

<sup>a</sup> Lilliefors significance correction.

- For **Inferential scores** all the variables were normally distributed ( $p > 0.05$ ).

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent variable: Inferential post-test scores

<i>F</i>	<i>df1</i>	<i>df2</i>	Sig.
1.139	1	62	0.290

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

<sup>a</sup> Design: Intercept + Inferential pre-test scores + Groups.

- For Inferential post-test scores, ( $p > 0.05$ ), therefore the assumption of Homogeneity is met.

### ANCOVA for Inferential Comprehension Post-test Scores

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta p^2$
Corrected model	42.766 <sup>a</sup>	2	21.383	15.348	0.000	0.335
Intercept	58.364	1	58.5364	41.892	0.000	0.407
Pre-inferential Score	39.703	1	39.703	28.498	0.000*	0.318
Experiment	1.161	1	1.161	0.833	0.365	0.013
Error	84.984	61	1.393			
Total	2108.000	64				
Corrected Total	127.750	63				

Note. Dependent variable: post-inferential score. <sup>a</sup> R Squared = 0.335 (Adjusted R Squared = 0.313).

\*  $p < 0.05$ .

## Appendix M: Evaluative Comprehension Scores: Assumptions, ANCOVA and Non-parametric Tests

### Tests of Normality of Evaluative Scores

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pre-test	Control (FTF) group	0.860	32	0.001
	Experimental (BL) group	0.869	32	0.001
Post-test	Control (FTF) group	0.883	32	0.002
	Experimental (BL) group	0.910	32	0.012

<sup>a</sup> Lilliefors significance correction.

- For Evaluative **scores** all variables were not normally distributed ( $p < 0.05$ ). Although normality is violated in this case, ANCOVA was used to examine the effects of BL on students' evaluative comprehension because ANCOVA is considered robust to the violation of this assumption, especially with equal size sample, as the case in this study. The non-parametric Mann-Whitney test was also applied with these variables as shown below and the results indicate that there was no significant difference between both groups in post-evaluative scores, confirming the ANCOVA result.

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent variable: Evaluative post-test scores

<i>F</i>	<i>df1</i>	<i>df2</i>	<b>Sig.</b>
1.201	1	62	0.277

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

<sup>a</sup> Design: Intercept + Evaluative pre-test scores + Groups.

- For Evaluative post-test scores, ( $p > 0.05$ ), therefore the assumption of Homogeneity is met.

### ANCOVA for Evaluative Comprehension Post-test Scores

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>ηp2</i>
Corrected model	6.924 <sup>a</sup>	2	3.462	3.784	0.028	0.110
Intercept	26.802	1	26.802	29.294	0.000	0.324
Pre-inferential Score	4.283	1	4.283	4.681	0.034*	0.071
Experiment	2.514	1	2.514	2.747	0.103	0.043
Error	55.811	61	0.915			
Total	509.000	64				
Corrected Total	62.734	63				

Note. Dependent variable: post- evaluative scores.

<sup>a</sup> R Squared = 0.110 (Adjusted R Squared = 0.081). \*  $p < 0.05$ .



**Non-parametric Tests: Mann-Whitney Tests: Evaluative Comprehension Scores**

			<b>Ranks</b>	
	<b>Group</b>	<b><i>n</i></b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
<b>Evaluative Pre-tests</b>	Control (FTF) group	32	31.92	1021.50
	Experimental (BL) group	32	33.08	1058.50
	<b>Total</b>	<b>64</b>		
<b>Evaluative Post-tests</b>	Control (FTF) group	32	28.95	926.50
	Experimental (BL) group	32	36.05	1153.50
	<b>Total</b>	<b>64</b>		

**Test Statistics<sup>a</sup>**

	<b>Pre-tests (Evaluative)</b>	<b>Post-tests (Evaluative)</b>
Mann-Whitney <i>U</i>	493.500	398.500
Wilcoxon <i>W</i>	1021.500	926.500
<i>Z</i>	-0.267	-1.590
Asymp. Sig. (2-tailed)	0.790	0.112

<sup>a</sup> Grouping variable: Group.**Non-parametric Tests: Wilcoxon Signed Ranks Tests: Comparison Between Pre-test and Post-test Scores for Evaluative Comprehension**

<b>Group</b>			<b><i>n</i></b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
<b>FTF</b>	Post-Evaluative –	Negative Ranks	9 <sup>a</sup>	13.11	118.00
	Pre-Evaluative	Positive Ranks	14 <sup>b</sup>	11.29	158.00
		Ties	9 <sup>c</sup>		
		Total	32		
<b>BL</b>	Post-Evaluative –	Negative Ranks	4 <sup>a</sup>	9.00	36.00
	Pre-Evaluative	Positive Ranks	16 <sup>b</sup>	10.88	174.00
		Ties	12 <sup>c</sup>		
		Total	32		

a. Post-Evaluative &lt; Pre-Evaluative.

b. Post-Evaluative &gt; Pre-Evaluative.

c. Post-Evaluative = Pre-Evaluative.

**Test Statistics: Wilcoxon Signed Ranks Tests: Comparison Between Pre-test and Post-test Scores for Evaluative Comprehension**

Group	Post-evaluative – Pre-evaluative
<b>FTF</b>	–0.632 <sup>a</sup>
<i>z</i> Asymp. Sign. (2-tailed)	0.527
<b>BL</b>	–2.782 <sup>a</sup>
<i>z</i> Asymp. Sign. (2-tailed)	0.005

a. Based on negative ranks.

**Appendix N: Students' and Teachers' Messages and Themes**

Discussions	Comprehension Strategies	Total Messages and Themes		Number of Participants (N = 32)		Student Messages	Teacher Messages
		Messages	Themes	<i>n</i>	%	Total	Total
1	Draw conclusion	34	39	23	72	28	6
2	Literal	34	42	25	78	29	5
3	Text ideas	38	52	26	81	32	6
4	Text purposes	43	53	26	81	37	6
5	Drawing conclusion	47	59	29	91	40	7
6	Literal	36	42	29	91	31	5
7	Inferring text ideas	48	58	29	91	42	6
8	Inferring word meaning	46	61	29	91	40	6
9	Text purposes	47	60	28	88	40	7
10	Inferring word meaning	48	61	31	97	42	6
11	Literal	45	53	29	91	39	6
12	Text purposes, evidence	53	65	31	97	47	6
<b>Total (12 Discussions)</b>		519	645	32	100	447	72

**Appendix O: Students' and Groups' Participation Rates Over the 12 Discussions**

Students	Group	Total Messages	Mean	SD	Group Messages
1	1	10	0.83	0.58	Number of students = 7 Total messages: 91 Mean: 13.00 SD: 2.08
2	1	12	1.00	0.60	
3	1	14	1.17	0.72	
4	1	12	1.00	0.43	
5	1	15	1.25	0.45	
6	1	12	1.00	0.43	
7	1	16	1.33	0.89	
8	2	16	1.33	0.89	Number of students = 6 Total messages: 97 Mean: 16.17 SD: 2.86
9	2	14	1.17	0.83	
10	2	18	1.50	0.67	
11	2	17	1.42	0.67	
12	2	20	1.67	0.89	
13	2	12	1.00	0.60	
14	3	14	1.17	0.58	Number of students = 6 Total messages: 80 Mean: 13.33 SD: 2.42
15	3	10	0.83	0.39	
16	3	16	1.33	0.78	
17	3	12	1.00	0.95	
18	3	12	1.00	0.43	
19	3	16	1.33	0.98	
20	4	19	1.58	0.67	Number of students = 7 Total messages: 96 Mean: 13.71 SD: 2.63
21	4	13	1.08	0.51	
22	4	11	0.92	0.67	
23	4	12	1.00	0.60	
24	4	13	1.08	0.79	
25	4	15	1.25	0.87	
26	4	13	1.08	0.67	
27	5	13	1.08	0.90	Number of students = 6 Total messages: 83 Mean: 13.83 SD: 0.98
28	5	13	1.08	0.79	
29	5	13	1.08	0.79	
30	5	15	1.25	0.97	
31	5	14	1.17	0.58	
32	5	15	1.25	0.87	
<b>Total</b>	32 students	447 $M = 14$ $SD = 2.42$			

**Appendix P: Students' Theme Types over the 12 Discussions**

<b>Disc- ussions</b>	<b>Comprehension Strategies</b>	<b>A</b>	<b>DQ</b>	<b>SQ</b>	<b>AG</b>	<b>SCS</b>	<b>ECG</b>	<b>RF</b>	<b>O</b>	<b>Total</b>	<b>%</b>
1	Inference: draw conclusions	14	3	5	1	1	2	1	3	30	6
2	Literal	21	1	2	1	2	3	1	3	34	7
3	Inferring text ideas	17	2	5	1	3	3	0	8	39	8
4	Evaluation of text purpose	15	5	7	1	3	4	1	6	42	8
5	Drawing conclusions	23	2	3	2	6	5	1	5	47	8
6	Literal	25	2	1	0	1	2	1	2	34	7
7	Inferring text ideas	19	2	3	2	6	5	1	7	45	9
8	Inferring word meaning	25	2	2	2	5	5	2	6	49	9
9	Evaluation of text purposes	17	4	5	4	7	5	1	7	50	10
10	Inferring word meaning	25	2	2	3	4	4	1	7	48	9
11	Literal	28	1	1	2	2	3	2	5	44	9
12	Text purpose, evidence	19	2	4	3	6	7	3	10	54	10
<b>Total</b>		248	28	40	22	46	48	15	69	516	
<b>%</b>		48	5	8	4	9	9	3	13	100	
<i>M</i>		20.67	2.33	3.33	1.83	3.83	4.00	1.25	5.75	43.00	
<i>SD</i>		4.25	1.15	1.87	1.11	2.12	1.48	0.75	2.30	7.39	

*Note.* A = Answer. DQ = Discussion Questions. SQ = Support Seeking Questions. AG = Agreement/Disagreement. SCS = Scaffolding Comprehension Strategy. ECG = Encouragement. RF = Reflection. O = Off-task Discussion.

**Appendix Q: Themes of Students Answering the Comprehension Questions**

<b>D</b>	<b>Comprehension Strategies</b>	<b>Students Who Posted Answers (N = 32)</b>		<b>Students Who Posted Correct Answers</b>		<b>Students Who Posted Wrong Answers</b>	
		<b>Total</b>	<b>%</b>	<b>Total</b>	<b>%</b>	<b>Total</b>	<b>%</b>
1	Inference: draw conclusion	14	44	10	71	4	29
2	Literal	21	66	17	81	4	19
3	Inferring text ideas	17	53	14	82	3	18
4	Evaluation of text purposes	15	47	11	73	4	27
5	Drawing conclusions	23	72	17	74	6	26
6	Literal	25	78	22	88	3	12
7	Inferring text ideas	19	59	16	84	3	16
8	Inferring word meaning	25	78	22	88	3	12
9	Evaluation of text purposes	17	53	14	82	3	18
10	Inferring word meaning	25	78	23	92	3	11
11	Literal	28	88	25	89	2	11
12	Text purposes, evidence	19	59	16	84	3	9
<b>Total</b>		248		207		41	
Average		20.67	64.58	17.75		3.42	
SD		4.52	14.17	4.81		1.00	

**Appendix R: Scaffolding Comprehension Methods Used by Students During the 12 AODs (Number of Themes)**

<b>Comprehension Levels</b>	<b>Providing Answer Examples</b>	<b>Providing Strategy Explanations</b>	<b>Providing Feedback</b>	<b>Referring to Students' Forum Guide</b>	<b>Total (%)</b>
Literal	3	0	0	2	5 (11%)
Inferential	5	11	5	4	25 (54%)
Evaluative	2	6	6	2	16 (35%)
<b>Total Themes</b>	10	17	11	8	46
(%)	(22%)	(37%)	(24%)	(17%)	(100%)

**Appendix S: Teachers' Involvement Themes During the 12 AODs**

<b>D</b>	<b>Comprehension Strategies</b>	<b>Design &amp; Organisation</b>	<b>Supporting Discussion</b>	<b>Instructions</b>	<b>Total Themes</b>	<b>%</b>
1	Inference: draw conclusions	2	3	4	9	7
2	Literal	2	3	3	8	6
3	Inferring text ideas	4	4	5	13	10
4	Evaluation of text purposes	3	4	4	11	9
5	Drawing conclusions	2	4	6	12	9
6	Literal	2	2	4	8	6
7	Inferring text ideas	2	5	6	13	10
8	Inferring word meaning	2	4	6	12	9
9	Evaluation of text purposes	2	4	4	10	8
10	Inferring word meaning	2	5	6	13	10
11	Literal	2	3	4	9	7
12	Text purposes, evidence	2	5	4	11	9
<b>Total (%)</b>		27(21%)	46 (36%)	56 (43%)	129	
<b>Mean (SD)</b>		2.25 (0.62)	3.83 (0.94)	4.67 (1.07)	10.75 (1.91)	



**Appendix T: Design and Organisation Themes Used by Teachers During the 12 AODs**

<b>D</b>	<b>Comprehension Strategies</b>	<b>Setting Curriculum</b>	<b>Designing Methods</b>	<b>Establishing</b>		<b>Total</b>	<b>%</b>
				<b>Time Parameters</b>	<b>Technical Support</b>		
1	Inference: draw conclusions	1	1	0	0	2	7.4
2	Literal	1	1	0	0	2	7.4
3	Inferring text ideas	1	2	1	0	4	14.8
4	Evaluation of text purposes	1	1	1	0	3	11.1
5	Drawing conclusions	1	1	0	0	2	7.4
6	Literal	1	1	0	0	2	7.4
7	Inferring text ideas	1	1	0	0	2	7.4
8	Inferring word meaning	1	1	0	0	2	7.4
9	Evaluation of text purposes	1	1	0	0	2	7.4
10	Inferring word meaning	1	1	0	0	2	7.4
11	Literal	1	1	0	0	2	7.4
12	Text purposes, evidence	1	1	0	0	2	7.4
<b>Total</b>		12	13	2	0	27	
<b>%</b>		44%	48%	7%	0%	100%	

**Appendix U: Discourse Facilitation Themes Used by Teachers During the 12 AODs**

<b>D</b>	<b>Comprehension Strategies</b>	<b>Encour-aging</b>	<b>Setting Climate</b>	<b>Assessing the Efficacy</b>	<b>Social cues</b>	<b>Total</b>	<b>%</b>
1	Inference: draw conclusions	3	0	0	0	3	6.5
2	Literal	2	0	0	1	3	6.5
3	Inferring text ideas	3	0	0	1	4	8.7
4	Evaluation of text purposes	2	0	0	2	4	8.7
5	Drawing conclusions	4	0	0	0	4	8.7
6	Literal	2	0	0	0	2	4.3
7	Inferring text ideas	4	0	0	1	5	8.7
8	Inferring word meanings	3	0	0	1	4	8.7
9	Evaluation of text purposes	4	0	0	0	4	8.7
10	Inferring word meaning	4	0	0	1	5	10.9
11	Literal	3	0	0	0	3	6.5
12	Text purposes, evidence	4	0	0	1	5	10.9
<b>Total</b>		38	0	0	8	46	
<b>%</b>		83%	0%	0%	17%	100%	

**Appendix V: Teaching Instruction Themes Used by Teachers During the 12 AODs**

<b>D</b>	<b>Comprehension Strategies</b>	<b>Content/ Questions</b>	<b>Explicit Explan- ation</b>	<b>Model -ling</b>	<b>Mis- concep- tions</b>	<b>Feed back</b>	<b>Sources</b>	<b>Total</b>	<b>%</b>
1	Inference: draw conclusions	1	1	1	0	1	0	4	7
2	Literal	1	1	1	0	0	0	3	9
3	Inferring text ideas	1	1	1	0	2	0	5	7
4	Evaluation of text purposes	1	1	1	1	0	0	4	7
5	Drawing conclusions	2	1	1	1	1	0	6	11
6	Literal	1	0	0	1	1	1	4	11
7	Inferring text ideas	2	0	1	1	2	0	6	7
8	Inferring word meaning	1	0	1	0	3	1	6	11
9	Evaluation of text purposes	1	0	1	0	2	0	4	5
10	Inferring word meaning	1	1	1	1	2	0	6	11
11	Literal	1	0	0	0	2	1	4	7
12	Text purposes, evidence	2	0	0	0	1	1	4	7
<b>Total</b>		15	6	9	5	17	4	56	
<b>%</b>		27%	11%	16%	9%	30%	7%	100%	

## Appendix W: Approval Letter- Human Research Ethics Committee



**RESEARCH INTEGRITY**  
**Human Research Ethics Committee**  
Web: <http://sydney.edu.au/ethics/>  
Email: [ro.humanethics@sydney.edu.au](mailto:ro.humanethics@sydney.edu.au)

**Address for all correspondence:**  
Level 6, Jane Foss Russell Building - G02  
The University of Sydney  
NSW 2006 AUSTRALIA

Ref: PB/KW

9 /8/2010

Dr Chun Hu  
Faculty of Education and Social Work  
Education Building – A35  
The University of Sydney  
Email: [chun.hu@sydney.edu.au](mailto:chun.hu@sydney.edu.au)

Dear Dr Hu

Thank you for your correspondence dated 2 August 2010 addressing comments made by the Human Research Ethics Committee (HREC). The Executive Committee of the HREC, at its meeting of **3 August 2010**, considered this information and approved the protocol entitled **"The effects of using online discussion on first year high school students' reading comprehension, participation, and attitudes toward reading"**.

Details of the approval are as follows:

Protocol No.: 13042  
Approval Period: August 2010 – August 2011  
Authorised Personnel: Dr Chun Hu  
Yahya Qenaey  
Alyson Simpson

Documents approved:  
Parental Information Statement (Parent) (Version 2, 2/8/2010)  
Participant Information Statement (Teacher) (Version 2, 2/8/2010)  
Parental (or Guardian) Consent Form (Version 1, 5/7/2010)  
Participant Consent Form (Teacher) (Version 1, 5/7/2010)  
Reading Comprehension Pre-test  
Reading Comprehension Post-test  
Attitudes Survey  
Students' Perceptions' Questionnaire  
Teachers' Interview Instrument  
Students Interview Instrument  
Permission letter from Department of Education in Saudi Arabia

The HREC is a fully constituted Ethics Committee in accordance with the National Statement on Ethical Conduct in Research Involving Humans-March 2007 under Section 5.1.29.

The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Research Involving Humans. N.B. A report on this research **must** be submitted every 12 months from the date of the approval, or on completion of the project, whichever occurs first. Failure to submit reports will result in the withdrawal of consent for the project to proceed. Your report will be due on **31 August 2010**, please put this in your diary.

Deputy Manager Human Ethics  
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ABN 16 211 613 464  
CRICOS 00026A



**Special Condition/s of Approval**

1. Please forward permission from School Principals in Saudi Arabia before research commences

**Chief Investigator / Supervisor's responsibilities to ensure that:**

1. All serious and unexpected adverse events should be reported to the HREC within 72 hours for clinical trials/interventional research.
2. All unforeseen events that might affect continued ethical conduct of the project should be reported to the HREC as soon as possible.
3. Any changes to the protocol must be approved by the HREC before the research project can proceed.
4. All research participants are to be provided with a Participant Information Statement and Consent Form, unless otherwise agreed by the Committee. The following statement must appear on the bottom of the Participant Information Statement: *Any person with concerns or complaints about the conduct of a research study can contact the Deputy Manager, Research Integrity (Human Ethics), University of Sydney on +61 2 8627 8176 (Telephone); + 61 2 8627 8177 (Facsimile) or [p.humanethics@sydney.edu.au](mailto:p.humanethics@sydney.edu.au) (Email).*
5. Copies of all signed Consent Forms must be retained and made available to the HREC on request.
6. It is your responsibility to provide a copy of this letter to any internal/external granting agencies if requested.
7. The HREC approval is valid for four (4) years from the Approval Period stated in this letter. Investigators are requested to submit a progress report annually.
8. A report and a copy of any published material should be provided at the completion of the Project.

Please do not hesitate to contact Research Integrity (Human Ethics) should you require further information or clarification.

Yours sincerely

**Associate Professor Philip Beale**  
**Chair**  
**Human Research Ethics Committee**

cc: [yqen4202@mail.usyd.edu.au](mailto:yqen4202@mail.usyd.edu.au)

