

## Effects of Teaching Argumentative Reading and Writing by Integration in an E-Learning Environment on Literacy Development in EFL College Students

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### Abstract

*Developing argumentative reading and writing skills is a recent curricular reformatory practice in college academic writing settings worldwide. Given that both skills are process-oriented, the authors assumed that there was a relationship between both skills by integration. While a large body of research has addressed reading comprehension and written production independently, several scholarly endeavours have soundly examined the possible relationships between these two psycholinguistic processes. This descriptive study explored the effects of teaching argumentative reading and writing in an integrated online environment during the reading process on EFL learners' learning about writing. In this research, ways of argumentative reading likely to promote the development of writing and reading skills through an integration of skills approach were sought for teaching EFL in a way to help EFL learners develop their argumentative writing ability via online argumentative reading. Correlational analysis showed that the tools used in the study were valid and reliable enough to be used in the experiment, demonstrating significant coefficients between argumentative reading and writing. The experimental study results showed significant improvements on posttesting on the argumentative reading/writing tests compared to pretesting and control group to the good of the experimental group. The paper ends with notes on pedagogical implications and recommendations for further research.*

### Introduction

A review of current literature in literacy education provides insights into several major issues faced by language researchers and teachers. The first challenge is that much extant literature has focused on features of reading and writing in educational and academic settings (e.g. Swales, 1990). However, there is a paucity of information regarding how students, especially non-native speakers (NNS), develop their academic writing and reading skills and gain access to the discourse community; i.e., academic writing/reading classrooms, and the general discourse community for which they are being prepared to join in their future careers.

Extant research in the English as a Second Language (ESL) context has tackled concerns of acquisition and development of literacy showing that literacy should be explicitly integrated within the disciplines in regular language and content courses (Lea, 2004, 2008; Purser, Donohue, Skillen, Peake & Deane, 2008; Tindale, 2005; Wingate 2006). In the EFL context, however, researchers have recently started to address literacy development issues, resulting in a growing body of research. Abrams (2001) describes this growing research outlook as follows:

“Several studies in second language acquisition have already examined the ability of computer-mediated communication (CMC) to provide learners a forum in which they can produce more language ... and more diverse discourse functions ... than during in-class discussions, and in which they can become the initiators of discourse instead of mere followers of teacher-directed interaction” (p. 490).

In addition, current pedagogical practice has brought about "a growing interest in integrating computer-mediated communication (CMC) tools into language learning along with the development of Internet technology". (Zeng & Takatsuka, 2009; Fageeh & Mekheimer, 2013). Such practice covers both ESL and EFL domains, where CMC has proved to be an effective medium in facilitating the emergence of “a learner-centred discourse community”, and initiating collaborative peer-peer dialogues as effective tools for mediating L2 learning of integrated language skills (Darhower, 2002). As such, EFL learners can “benefit from interaction, because the written nature of the discussion allows greater opportunity to attend to and reflect on the form and content of the communication” (Kern and Warschauer, 2000, p. 15).

In this vein, Abrams (2001) observed that e-learning is now recognized as 'a great equalizer', being widely adopted for the benefit of maximal language use for communication purposes; he notes that ...

"given its ability to result in a more evenly distributed amount of participation (e.g., measured in number of words) among interactants than face-to-face discussions" (ibid., p. 490).

Furthermore, most extant research has focused on the nature and genres of writing and/or reading comprehension tasks that language learners in both ESL/EFL contexts take to (Lea & Street, 1997; 1999; 2006) and the ways in which students have to adapt to a language and discourse that is specific to a subject or discipline area (Lea, 1998; Lillis, 2003). Yet, few studies in the EFL context focused on how students develop their academic writing and reading comprehension skills in academic settings, and enable them to gain access to the particular discourse community in performing their reading and writing tasks with the help of CMC technologies.

In addition, investigations on reading/writing connections have not been guided by a consensual framework or unified theory of language processing (Alvermann, Unrau & Ruddell, 2013, p. 959). Therefore, reading and writing were not correlated on a common and sound ground of similarity, and were and are being treated as discrete language skills. Research on literacy skills, spanning both reading and writing, has borne out related concepts such as discourse, comprehension, and production that have been studied from a perspective of the central role of reading/writing in cognitive processes and the role of the reader/writer' schemata (de Beaugrande, 1997; Gomez, 1994; Nystrand, 1990; Van Dijk, 1985). This research showed that the main obstacles that impede the development of literacy skills are: (a) problems with the theoretical definitions or theories underlying reading and writing, and (b) problems with the measures that are being compared when they do not focus on the same psycholinguistic construct (Alvermann, Unrau & Ruddell, 2013, p. 959).

Recent research findings claim that reading and writing are related and integrated processes, the development of each can improve the other, thus providing useful insights for the pedagogy of both skills (Spivey, 1990; 1997; Sadoski and Paivio, 1994; 2001). Spivey (1990) argues that if a written text is produced from particular sources, then the reader becomes a writer because the source text is transformed into a new text. That is to say, the writer, while using other texts in the creation of a new one, employs cognitively constructive operations of organization, selection, and connection to elaborate meaning (Spivey, 1990).

### **The Integrated Skills Approach**

Second/Foreign language research is replete with calls promoting the integrated approach to the study of language (Flora, 1995; King, 1996; Lynch, 1983; Rosenblatt, 1994; Allred, 1994). Nonetheless, there is little empirical testimony in favour of the claimed benefits of an integrated approach to language instruction (Oxford & Leaver, 1996; O'Day, 2002; Heffernan, 2006). Integrated language teaching is deemed to be an effective strategy for holistic language learning, advocating meaningful learning in real life contexts for communicative purposes (Oxford, 2001; Mekheimer, 2011). Crudely put, this approach aims to teach language skills as a means of communication that serves real-life communicative purposes.

Theoretically, there are subtle connections between language skills which scrap segregated skill teaching as useless and void; this is evidenced in models of language acquisition in children learning their native languages. According to Strang (1972):

'Listening precedes speaking and reading. Children acquire their native tongue through listening to and imitating the speech of their parents. Speaking is basic to both reading and writing' (p. 291).

The case being thus, there is a sequence in language skills development in an entwined and interdependent fashion. Learners often carry over their skills and declarative knowledge from one skill to another which facilitates the growth of the other skills (Strang, 1972). Prior research also indicates that foreign language learners' reading and listening comprehension skills can be deployed to the skills of written production (e.g. Strickland, 1964; Loban, 1963; Ruddell, 1966; Thomas, 1974; Cayer and Sacks, 1979; Mekheimer, 2010).

Therefore, research findings support the claims of teaching foreign language according to an integrated approach, especially the integration of reading comprehension with writing skills (Heffernan, 2006; Al-Ghamari, 2004; Faydi, 2003; Bose, 2003; Mekheimer, 2010). Researchers emphasise the fact that reading and writing are closely connected "as readers and writers activate schema to create meaning from their own and others' texts" (Mekheimer, 2010). Reading and writing are not separate entities but parts in a communicative process.

Therefore, researchers suggested a new discourse approach from the point of view of discourse analysis, semiotics, post-structuralism, and de-constructivism, mainly concerned with reading and writing being viewed as a dual coding/encoding reciprocal process (Spivey, 1990; 1997; Sadoski and Paivio, 2001). For instance, Sadoski and Paivio (2001) proposed a methodical theoretical approach grounded in this unified theory of Spivey's which hypothesized that the processes of comprehension and production and their constituent skills and sub-skills, emphasized the importance of integrating verbal and non-verbal cognition towards the achievement of comprehension, and subsequently, production in written discourse.

Issues of skills integration have come to the fore on the research agenda of applied linguistics and TESOL researchers (Mekheimer, 2011). In the light of this brief review, the present research derives from the following main research question:

*How can online teaching via Blackboard help EFL learners develop their argumentative writing ability via online argumentative reading?*

This main research question gave rise to the following sub-questions:

1. *How valid and reliable are the tools used to collect data on the reading/writing of argumentative texts in EFL students?*
2. *Is there a correlation between argumentative reading and writing?*
3. *What are the effects of teaching argumentative reading via Blackboard on developing argumentative writing in EFL college students?*

### **Problem of the Study**

Developing argumentative reading and writing and acquiring strategies and practices have become key components of recent curricular reforms in university education language institutions. These reforms are often based on efforts to engage students in debates that echo the controversies and discussions in their daily lives, the other's culture, the workplace, professions, and academic disciplines where language is the medium of communication (Andrews, 2010; Andriessen, Baker, & Suthers, 2003; Applebee, 1996; Graff, 2003; Street, 2004; van Eemeren, Grootendorst, & Henkemans, 2002). Perhaps one of the more stark examples of the growing significance of argumentation is the emphasis of argumentative reading and writing in academic literacy literature. Nonetheless, the rationale for the assessment of students' skills in argumentative reading and writing activities is not always easy to develop in foreign language instruction situations. Language instructors may identify the significance of argumentative reading and writing as the fulcrum to acquiring academic literacies, but they are often apprehensive of introducing arguments or confrontational debates in reading or writing themes that may develop unfavourable "adversarial frames of minds" (Johnson & Johnson, 2009; Tannen, 1999, p. 4).

Furthermore, assuming their experiences with arguments, students may then assume that in formulating claims, they simply need to summarize their claims to achieve the goal of convincing audiences without providing supporting evidence, considering counterarguments, or changing their own or others' stances on an issue. On another frontier, the ability to recognise the underpinning arguments in a writing/reading situation in academic settings, and its claims, warrants, and evidence, in reading and the ability to compose a high-quality argument, and its claims, warrants, and evidence, in writing are critical skills for academic success, especially at advanced levels of language learning (Graff, 2003; Hillocks, 2010, 2011; Kuhn, 2005).

This investigation intends to gear *Well-read – book 3* and *Effective Academic Writing – book 2* selected for level 3 at the college level towards developing argumentative literacy skills and identifying the effectiveness of this integrated pedagogical approach in developing these skills in literacy development in EFL learning. Therefore, the purpose of the present investigation is to explore the text reading-writing relations.

As research on reading-writing relationships should move beyond correlational studies (Parodi, 2003; Tierney & Shanahan, 1991), there is still a paucity of research that compares reading-writing connections. Therefore, our study is correlational-experimental; set to examine the text variables in argumentative reading-writing texts in EFL contexts. This overall purpose is to determine correlations between reading and writing processes at different text levels (local versus global coherence and super-structural organization) as well as determine the effects of using argumentative reading on developing argumentative writing. Assuming that there are similarities between the skills of reading and writing, the researcher sought to compare the relationship between these two skills systematically and analytically utilising correlational research analysis and experimental designs.

## ***Hypotheses of the Study***

This study was designed to test the following null hypotheses ( $p \leq 0.01$ ):

1. There are no significant correlations between argumentative reading and writing.
2. There are no significant differences between the control group and the experimental group on pretesting on the mean scores of argumentative reading/writing tests.
3. There are no significant differences between the mean scores of argumentative reading/writing tests of experimental participants and the control participants on post-testing mean scores.

## ***Review of Literature***

### **Argumentative Reading and Writing**

A definition of argumentative reading and writing that permits critical analysis of empirical studies of teaching and learning as well as integration of research perspectives is difficult to come by. Both teaching and research often depend especially on textual or structural assumptions based on a special interpretation of Toulmin's (2006) model: argumentative reading and writing both involve identification of a thesis (also called a claim), supportive evidence (empirical or experiential), and assessment of warrants connecting the thesis, evidence, and situation constituting an argument. Opposed to simply attempting to persuade someone to believe or do something, evidence-based argumentation involves making a claim supported by reasons or evidence from multiple sources that connects to the claim in a principled way. This structuralist/formalist view of argument is effective in foregrounding patterns of reading and/or writing in order to induce the argument schemata into the minds of students (Reznitskaya & Anderson, 2002; Kucer, 2001) and to help them conceptualise and relate these mind-sets to their social practices (Lunsford, 2002; Prior, 2005).

However, such a perspective, especially when it excludes other views, also has its own delimitations and constraints (Prior, 1998; 2005). Structuralist/formalist notions of argumentation are necessary but insufficient for analysing the complex argumentative social practices in specific literacy events, given the limited language capacity as well as the limited life experience of foreign language learners. As a literacy researcher, we base our view of argumentative reading and writing in foreign language use to the rhetorical contexts or literacy events that are within reach for EFL students in order to design effective reading/writing situations conducive to argumentative reasoning (Barton, 2007). Therefore, discussions of the difficulty of argumentative reading and writing need to treat argument as a set of social practices with a variety of uses across a range of different literacy events accessible for the EFL learner in socio-cultural situations that would commensurately match the religious, social and cultural aspects of a conservative society, such as Saudi Arabia.

### **Challenges in Teaching Argumentative Reading and Writing**

The view of argumentative reading and writing as collaborative social practices extends beyond traditional notions of teaching the persuasive essay/reading passage or the position/support argumentative essay/reading text to what Langer (2002) referred to as "high literacy," that is, not just basic literacy but a "deeper knowledge of the ways in which reading, writing, language, and content work together" (p. 3). In a recent study, Applebee and Langer (2006) explored students' writing performance on the National Assessment of Educational Progress (NAEP) from 1998 to 2002. The most relevant to our literature overview here is a concern that Applebee and Langer expressed regarding the types of writing that teachers assigned, as reported by Persky, Daane, and Jin (2003): over 40% of pre-intermediate and intermediate students report writing essays requiring analysis or interpretation at most a few times a year. This is problematic since it is this type of more complex writing that is needed for advanced academic success in college coursework. (Applebee and Langer, 2006, p. 8) Consequently, recent research into students' writing performance reveal that only a meagre portion of students (i.e., 3% of eighth graders, 6% of 12<sup>th</sup> graders in ESL contexts) can make informed, critical judgments about written text, let alone foreign language contexts (Perie, Grigg, & Donahue, 2005). Only 15% of 12<sup>th</sup>-grade students performing at the proficient level were able to write well-organized essays in which they took clear positions and consistently supported those positions, using transitions to lead the reader from one part of the essay to another (Perie et al, 2005). Moreover, given the need to integrate argumentative reading and writing instruction, one major challenge in teaching argument is that students have difficulty mastering advanced reading comprehension and critical literacy skills in core disciplines associated with engaging in and critiquing effective arguments, especially in science, history, and literature (Biancarosa & Snow, 2004; Carnegie Council on Advancing Adolescent Literacy, 2010; Rampey, Dion, & Donahue, 2009).

Students also have difficulty recognizing and applying argumentative text structures (Chambliss & Murphy, 2002), generating evidence (Kuhn, 1991), and offering relevant reasons, counterarguments, and rebuttals (McCann, 1989). These findings are of studies conducted in ESL contexts; the situation in EFL contexts is far more deteriorated, which warrants more work on curricular reform and programme evaluations on a constant basis.

### **Literacy development in e-learning milieus**

People are using various technological devices such as computers and mobile phones to communicate and interact with others. The use of technology has made communication and collaboration more convenient and affordable than before. In this context e-learning has been increasingly used in educational environments, especially in the last two decades. From this perspective, Collaborative Learning Theory (CLT) seems to support e-learning for enhancing collaboration among learners.

In e-learning media, theories of academic literacy support the claim that learning reading and writing skills through the application of learning management systems can lead to enhanced performance of the students (Fageeh & Mekheimer, 2013). Simply put, EFL learners develop their academic writing skills through the understanding and practice of socially situated academic knowledge in e-learning situations. In this vein, too, Warschauer (1997) explained that understanding the role of e-learning and networked teaching reveals the socio-cultural interrelationships among text, talk, and learning. According to him, ESL/EFL learners use language-related collaboration in e-learning settings (a) to become competent members of a speech community or social group, (b) to gain important cultural knowledge or content matter, or (c) to develop literacy skills or critical thinking skills. Warschauer notes, "The socio-cultural perspective, deriving in part from the concepts of Vygotsky (Vygotsky, 1978), illuminates the role of social interaction in creating an environment to learn language, learn about language, and learn "through" language" (Warschauer, 1997, p 471).

Argumentation in reading and writing relies much on the concept of sharing which, in this study, is the "use of an online workplace" for swapping reading/writing materials, negotiating ideas, and coordinating collaboration amongst "a group of people who use technologies for social collaborative learning" (Wang, 2010, p. 1271) for the sake of argumentation. In the context of e-learning, Wang (2010) recommended the use of strategies that may be applied to effectively coordinate individual endeavours and exchanges in argumentative reading/writing discussions and assignments. In this way, Goodfellow (2005) suggests the adoption of "an academic literacies perspective to argue for a critical approach to the writing practices of the online university classroom." According to Goodfellow, it can be concluded that "such a resource can provide a space for students to critique the dominant literacies of the online university." (p 481)

Last, but far from least, the acquisition of academic literacy has often been investigated in the e-learning context through teaching and learning writing skills in various discourse communities. Writing tasks in higher education often require students to draw upon outside sources and to adopt the styles and genres of academic discourse. They must conduct research, summarize and paraphrase, cite sources, adopt genre conventions that meet audience expectations, and select words and grammatical patterns that are characteristic of less personal and more formal genres of writing.

### **Research Methodology**

This study followed a correlational-experimental research design to first explore the correlations between argumentative reading and argumentative writing at three levels of micro-structures, macro-structures and supra-structures, and second to examine the effects of teaching argumentative reading and writing by integration in an e-learning environment on argumentative writing development in EFL college students. This research entails "observation of phenomena and analysis of data with as little restructuring of the situation or environment under scrutiny as possible" (Lauer and Asher, 1988). This research design also followed the interpretive tradition by investigating the role of Blackboard in the development of non-native English speakers' writing/writing for argumentative purposes in the discipline of academic writing. In order to achieve these objectives, the researcher designed four tests: two comprehension tests and two writing tasks, as will be described later.

### **Sampling**

The pilot study was conducted on 300 students of Reading Comprehension and Writing at different levels of study. The same students of the pilot study also participated in the first correlational study.

For the second field study, there were 27 juniors of the English Department, College of Languages and Translation, King Khalid University (KKU) in Abha, enrolled in two selected English 217 (Writing IV) and English 211 (Reading Comprehension IV) classes in the First Semester 2012/2013 and their instructors who comprised the participants in this investigation. There were also 25 students who participated in the control group. English 217 (Writing IV) and English 211 (Reading Comprehension IV) are three credit-hour academic courses required of all students of the English Department, KKU, which were designed to prepare students for academic writing and reading skills.

### Instruments

For fulfilling the objectives of this investigation, two reading comprehension tests and two written production tests were developed and validated. The written production test items (see Appendix 1) required the participants to write an argumentative text based on some instructions that overtly described the purpose of the writing tasks, the objective of these tasks or text types, the subject matter topic, the audience addressed, and the appropriate style of writing.

The reading comprehension tests (see Appendix 2) asked the participants to read a sample of argumentative writing texts and answer nine open-ended questions that followed the reading passages. The questions required the readers to draw some specific text-based inferences that were related to appropriate world knowledge and particular sub-processes of reading comprehension under consideration in the present study. These questions were formulated to evaluate reading and writing argumentative discourse at three main levels of discourse analysis theorised in a model of argumentative reading/writing text analysis grounded in psycholinguistic theory proposed by Parodi (2007). Below is a description of these three levels and sub-levels for both comprehension (reading) and production (writing) of argumentative texts:

Level of Analysis	Comprehension (Reading Comprehension)	Production (Writing)
Microstructure (local coherence relations)	(a) Inferred nominal co-reference (b) Inferred nominal ellipsis (c) Inferred cause-effect relations	(a) Maintained nominal co-reference (b) Maintained nominal ellipsis (c) Maintained cause-effect relations
Macrostructure (global coherence relations)	(a) Inferred main topic (b) Inferred macro-proposition 1 (c) Inferred macro-proposition 2	(a) Main topic development (b) Macro-proposition 1 organization (c) Macro-proposition 2 organization
Superstructure (text type canonical relations)	(a) Inferred thesis (b) Inferred arguments (c) Inferred conclusion	(a) Explicit adequate thesis (b) Adequate and coherent arguments (c) Adequate and coherent conclusion

**Adapted from Giovanni Parodi (2007), p. 232**

These three discourse analysis levels (micro coherence, macrocoherence, and super-structural organization) address both argumentative reading and argumentative writing, described above as comprehension and production respectively. Each level has a variety of sub-levels described above to demonstrate the psycholinguistic sub-processes involved in the comprehension and production of argumentative discourse. Therefore, the written production and reading comprehension tests have particularly addressed topics that had been previously taught by the teachers of each class. For instance, the comprehension tests were designed to elicit inferential information from the text in order to test how far the students comprehended the reading text and the between-the-lines extrapolations. For instance, students should be able to relate pronouns to their respective nouns that they nominate; this is called inferred nominal co-reference (e.g. 'Scientists' and 'they'). The writing tests were designed to test how students could build local coherence by sticking to simple grammatical rules, such as subject-verb agreement, providing elliptical nouns or pronouns required for maintained nominal ellipsis, and so forth. In addition, at the macro-structural and organisational levels, students were asked to select the topics they would like to read and write about.

### Validity

To measure the validity of the argumentative reading/writing performance tests that tap into the effects of teaching argumentative reading and writing by integration in an e-learning environment on literacy development in EFL college students, three types of validation methods were used in the pilot study that was conducted on 300 students: internal consistency, correlation coefficient between styles, and factorial analysis.

To assess the validity of hypothetical constructs, internal consistency was used; a binary correlation coefficient was calculated for each item on a 9-item scale in seven styles, as illustrated in Table 1 below.

**Table 1: Internal Consistency for the Argumentative Reading and Writing Performance Tests:**

Item	Level	Correlation	Sig.
Nominal co-reference	Microstructural	.922(**)	0.000
Nominal ellipsis	Microstructural	.943(**)	0.000
Cause-effect relation	Microstructural	.911(**)	0.000
Macro-proposition 1	Macro-structural	.772(**)	0.000
Macro-proposition 2	Macro-structural	.931(**)	0.000
Topic	Macro-structural	.976(**)	0.000
Thesis	Super-structural	.971(**)	0.000
Arguments	Super-structural	.971(**)	0.000
Conclusion	Super-structural	.953(**)	0.000

The above table shows that correlation coefficients for all the 9 items on the three micro-structural, macro-structural, and super-structural levels are significant (Cronbach's  $\alpha = 0.01$ ). This indicates the validity of the test and, hence, not a single question was expunged.

The second method used was testing the correlation coefficient between the three levels of argumentative reading/writing for the entire sample. Table 2 below shows the correlation coefficient matrix for the entire sample.

**Table 2: Matrix of Correlation Coefficients between the Three Levels of Discourse Analysis**

		Microstructural	Macro-structural	Super-structural	Total Test
Microstructural	Pearson Correlation	1	.881(**)	.931(**)	.951(**)
	Sig. (2-tailed)	.	.000	.000	.000
	N	300	300	300	300
Macro-structural	Pearson Correlation	.881(**)	1	.959(**)	.977(**)
	Sig. (2-tailed)	.000	.	.000	.000
	N	300	300	300	300
Super-structural	Pearson Correlation	.931(**)	.959(**)	1	.992(**)
	Sig. (2-tailed)	.000	.000	.	.000
	N	300	300	300	300
Total Test Score	Pearson Correlation	.951(**)	.977(**)	.992(**)	1
	Sig. (2-tailed)	.000	.000	.000	.
	N	300	300	300	300

\*\* Correlation is significant at the 0.01 level (2-tailed).

The above table shows that correlation coefficient for the Micro-structural level as related to the other two levels is .881; the correlation coefficient for the Macro-structural as related to the other two levels is .931; and the correlation coefficient for the Super-structural is .951 as related to the other two levels. All of these coefficients are significant and positive at 0.01.

The table also shows that correlation coefficient between the macro-structural and the super-structural levels is .959, while it is .977 at the total test score level. These coefficients are significant and positive at 0.01. The correlation coefficients between the Super-structural level and total levels are .992. These coefficients are significant and positive at 0.01. Finally, factorial validity was calculated by conducting a factorial analysis on a sample of 300 students. This analysis reveals the common factors which compose the measurement. The following steps were taken in the analysis.

#### **The 9 X 9 Matrix of Correlations for the Test Items**

Applying the first-degree factor analysis using SPSS (Vers. 12) to get the factors that compose the measurement, it appears that the implicit root for these factors is greater than one. The 9 items of the scale were subjected to principal components analysis (PCA).

Prior to performing PCA, the suitability of data for factor analysis was assessed; inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. This was done through assessing the suitability of the sample for experimentation.

The Kaiser-Meyer-Olkin (KMO-test) is a measure of sampling adequacy; the sample is adequate if the value of KMO is greater than 0.5. The Kaiser-Meyer-Olkin value was .842, exceeding the recommended value of .6 (Kaiser, 1970; 1974), indicating the adequacy of the sampling process. Using SPSS, intercorrelation among the factors under scrutiny can be checked by using the Bartlett's Test of Sphericity, which "tests the null hypothesis that the original correlation matrix is an identity matrix (Field, 2000, p. 457). This test should be significant. When the correlation matrix is an identity matrix, there would be no correlations between the variables.

**Table 3 a: KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.842
Bartlett's Test of Sphericity	Approx. Chi-Square	5317.834
	<i>df</i>	36
	Sig.	.000

In this study, the Bartlett's Test of Sphericity reached statistical significance, supporting the factorability of the correlation matrix (See Tables 3a and 3b). In addition, further principal components analysis revealed the presence of one component with eigenvalues exceeding 1, explaining 89.574 per cent, of the variance (See Table 3c).

**Table 3b: Extraction Method: Principal Component Analysis: Communalities**

	Initial	Extraction
Nominal co-reference	1.000	.875
Nominal ellipsis	1.000	.911
Cause-effect relation	1.000	.850
Macro-proposition 1	1.000	.574
Macro-proposition 2	1.000	.859
Topic	1.000	.944
Thesis	1.000	.935
Arguments	1.000	.943
Conclusion	1.000	.900

The correlation matrix presents the inter-correlations between the studied variables. The dimensionality of this matrix can be reduced by "looking for variables that correlate highly with a group of other variables, but correlate very badly with variables outside of that group" (Field 2000, p. 424). By definition, factor loadings are the "correlation of the original variable with a factor" (Rietveld & Van Hout, 1993, p. 292).

In this study, a number of strong loadings and the loadings of all variables were substantially focused into only one component. The result of factorial analysis in this study pointed the presence of one factor as shown in tables 4a, 4b, and 4c below. The values of correlations ranged between 0.61 and 0.94, which are of a significant value. The variation percentage of factor was 86.574.



**Table 4a: The Correlation Matrix for calculating the correlations between each pair of variables**

	Factors	Nominal co-reference	Nominal ellipsis	Cause-effect relation	Macro proposition 1	Macro proposition 2	Topic	Thesis	Arguments	Conclusion
Correlation	Nominal co-reference	1.000	.952	.885	.610	.872	.876	.858	.910	.834
	Nominal ellipsis	.952	1.000	.919	.617	.838	.911	.901	.935	.881
	Cause-effect relation	.885	.919	1.000	.681	.771	.851	.880	.888	.830
	Macro proposition 1	.610	.617	.681	1.000	.667	.716	.726	.713	.687
	Macro proposition 2	.872	.838	.771	.667	1.000	.906	.874	.883	.926
	Topic	.876	.911	.851	.716	.906	1.000	.969	.955	.927
	Thesis	.858	.901	.880	.726	.874	.969	1.000	.928	.940
	Arguments	.910	.935	.888	.713	.883	.955	.928	1.000	.895
	Conclusion	.834	.881	.830	.687	.926	.927	.940	.895	1.000
Sig. (1-tailed)	Nominal co-reference		.000	.000	.000	.000	.000	.000	.000	.000
	Nominal ellipsis	.000		.000	.000	.000	.000	.000	.000	.000
	Cause-effect relation	.000	.000		.000	.000	.000	.000	.000	.000
	Macro proposition 1	.000	.000	.000		.000	.000	.000	.000	.000
	Macro proposition 2	.000	.000	.000	.000		.000	.000	.000	.000
	Topic	.000	.000	.000	.000	.000		.000	.000	.000
	Thesis	.000	.000	.000	.000	.000	.000		.000	.000
	Arguments	.000	.000	.000	.000	.000	.000	.000		.000
	Conclusion	.000	.000	.000	.000	.000	.000	.000	.000	

**Table 4b: Total Variance Explained: Extraction Method: Principal Component Analysis.**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.792	86.574	86.574	7.792	86.574	86.574
2	.496	5.513	92.087			
3	.300	3.329	95.416			
4	.163	1.817	97.232			
5	.107	1.188	98.421			
6	.057	.635	99.056			
7	.050	.561	99.616			
8	.024	.263	99.880			
9	.011	.120	100.000			

**Table 4c: Component Matrix (1): Extraction Method: Principal Component Analysis**

Component	
Nominal co-reference	.935
Nominal ellipsis	.955
Cause-effect relation	.922
Macro-proposition 1	.758
Macro-proposition 2	.927
Topic	.972
Thesis	.967
Arguments	.971
Conclusion	.949

1.00 1 components extracted.

Again, reconsidering the factor analysis results and the response level tables above, the researcher found that all the questions that form the test's items had a response level higher than 0.3 according to Kaiser's criterion on which this study relied for identifying the level of the responses to the questions. So, no question has been expunged. It was also found out that the levels of responses to the items of the first factor reached 9 items out of the overall 9 items of the measurement. These responses encompassed most items of the three levels of the test.

### Reliability

The test's reliability was confirmed by calculating the Cronbach Alpha coefficient using SPSS by calculating the test's reliability of each item individually. This means that in case of deleting the score of one item, if the reliability coefficient is greater than the Alpha reliability coefficient value for the measurement as a whole, the statement is poor and should be deleted from the measurement, while in case of deleting the score of the item, if the reliability coefficient is smaller than the Alpha reliability coefficient value for the measurement as a whole, the statement is thought to affect the reliability of the measurement as a whole rendering it to be reliable enough to be retained, and, therefore, should not be deleted.

A Cronbach's reliability assessment of the test revealed a reliability coefficient of 0.9735, which is high enough to consider for this test. By comparing the Alpha coefficient for each item and this overall coefficient, we found that the value of the 9 test items ranged from 0.9711 to 0.9063 and 0.9705; these values are less than the overall Alpha coefficient. This indicates the reliability of the test for use in the present study.

In addition, reliability was calculated by using the split-half method which divides the sample's scores on the measurement into two parts: odd questions and even questions. By using Spearman Brown's equation, reliability coefficients for the 3 levels and the overall score of the test were as follows:

The reliability coefficient in the first level (Microstructural) was 0.8564, the second level (Macro-structural) 0.8959, and the third level (Super-structural) 0.8252. All of these coefficients are significantly positive, thus providing further evidence that supports the test's reliability.

### Results of the First Field Study

The first field study was applied to the same sample selected for the pilot study (  $n = 300$ ). The purpose of this study was to check whether reading comprehension of argumentative texts is correlated with argumentative writing production in order to test the first hypothesis.

### Results related to Hypothesis # 1

The first hypothesis underlying this study states that there are no significant correlations between argumentative reading and writing assumedly at the micro-structural, macro-structural and super-structural or organisational levels of discourse analysis. The tables below sum up these findings.

#### The micro-structural level of discourse analysis

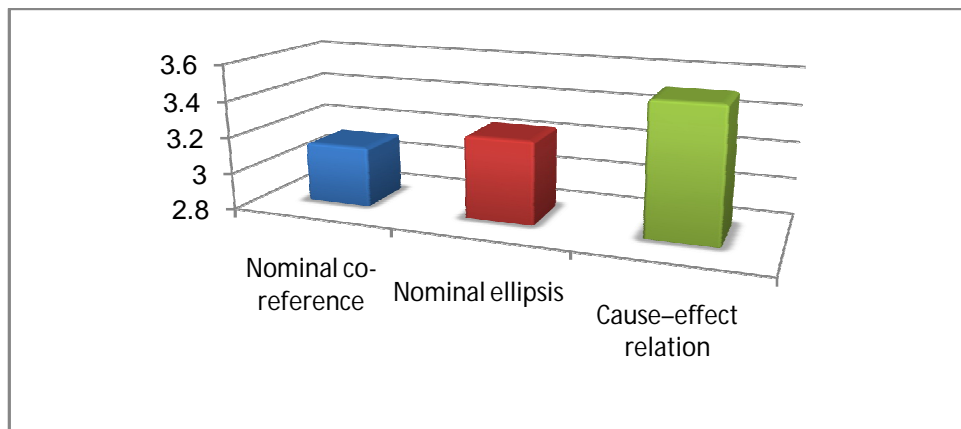
**Table 5: One-Sample t-Test for the sub-processes in comprehension/production at the micro-structural level**

Micro-structural Level sub-divisions	Mean	Std. Deviation	t-value	Sig.
Nominal co-reference	3.13	1.580	1.461	.145
Nominal ellipsis	3.25	1.649	34.178	0.000
Cause-effect relation	3.51	1.663	36.521	0.000
<b>Total Microstructural sub-process</b>	<b>9.89</b>	<b>4.758</b>	<b>36.016</b>	<b>0.000</b>

Using a single sample t-test, the researcher tested the null hypothesis that there were no significant correlations between argumentative reading and writing at the micro-structural for which the population mean is equal to 3.

For the sub-process, nominal co-reference, the t-statistic is 1.461 ( $df = 299$ ). The corresponding two-tailed p-value is .145, which is more than 0.05. We conclude that the mean of Nominal co-reference is not different from 3. For Nominal ellipsis, the t-statistic is 34.178 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. We conclude that the mean of Nominal ellipsis is different from 3. For the cause/effect relation, the t-statistic is 36.521 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. The researcher thus concludes that the mean of cause-effect is different from 3.

Finally, for the total microstructural level, the t-statistic is 36.016 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. We conclude that the mean of this Microstructural level is different from 3. Figure 1 below summarises the results of this t-test.



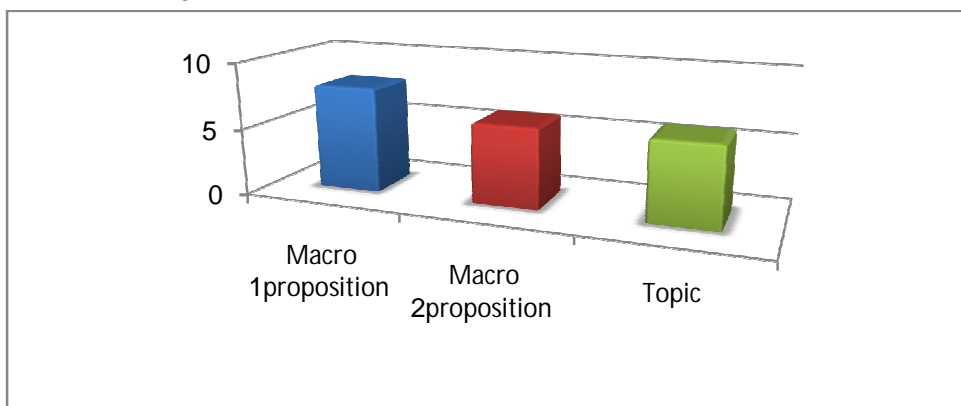
**Figure 1:** One-Sample t-Test for the sub-processes in comprehension/production at the micro-structural level

**The macro-structural level of discourse analysis**

**Table 6: One-Sample t-Test for the sub-processes in comprehension/production at the macro-structural level**

Macro-structural Level sub-divisions	Mean	Std. Deviation	t-value	Sig.
Macro proposition 1	7.96	2.310	37.190	0.000
Macro proposition 2	6.01	2.563	20.365	0.000
Topic	5.97	2.845	18.103	0.000
<b>Total Macro-structural sub-process</b>	<b>19.95</b>	<b>7.108</b>	<b>41.294</b>	<b>0.000</b>

Using a single sample t-test, the researcher tested the null hypothesis that that there are no significant correlations between argumentative reading and writing at the macro-structural level for which the population mean is equal to 3. For the sub-process, nominal co-reference Macro proposition 1, the t-statistic is 37.190 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. The researcher concludes that the mean of Macro proposition 1 is different from that of Macro proposition 3. For the Macro proposition 2, the t-statistic is 20.365 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. We conclude that the mean of Macro proposition 2 is different from 3. For Topic relation, the t-statistic is 18.103 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. Therefore, it can be concluded that the mean score of students' performance on Topic is different from the macro-structural sub-divisions of propositions 1 and 2. Finally, as for Macro-structural level, the t-statistic is 41.294 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. It is thus concluded that the mean of Macro structural is different from 3. Figure 2 below summarises these findings.



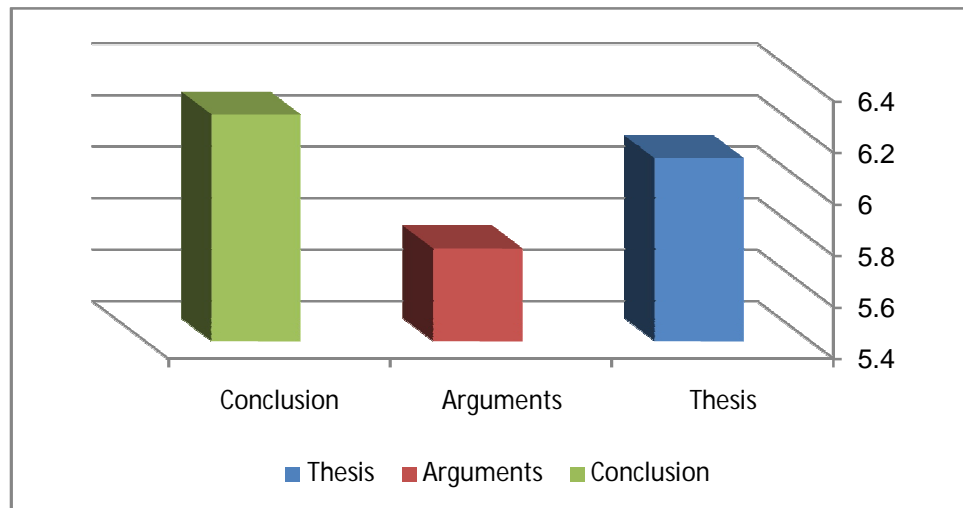
**Figure 2:** One-Sample t-Test for the sub-processes in comprehension/production at the macro-structural level

### The super-structural level of discourse analysis

**Table 7: One-Sample t-Test for the sub-processes in comprehension/production at the super-structural level**

Super-structural Level sub-divisions	Mean	Std. Deviation	t-value	Sig.
<b>Thesis</b>	6.11	2.890	18.622	0.000
<b>Arguments</b>	5.76	3.018	15.842	0.000
<b>Conclusion</b>	6.28	2.630	21.600	0.000
<b>Total Super-structural sub-process</b>	18.15	8.310	31.572	0.000

Using a single sample t-test, the researcher tested the null hypothesis that there are no significant correlations between argumentative reading and writing at the super-structural level for which the population mean is equal to 3. For the Thesis sub-division, the t-statistic is 18.622 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. We conclude that the mean of the Thesis sub-process is different from 3. For the sub-process of Arguments, the t-statistic is 15.842 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. We conclude that the mean score of Arguments is different from 3. For the sub-process of Conclusion, the t-statistic is 21.600 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. We conclude that the mean score of students on this component of Conclusion is different from 3. Finally, for the overall score of students at this level of Superstructure or organisation, the t-statistic is 31.572 ( $df = 299$ ). The corresponding two-tailed p-value is .000, which is less than 0.05. We conclude that the mean scores of students at the Super-structural level is different from 3. Figure 3 below summarises these results:



**Figure 3: One-Sample t-Test for the sub-processes in comprehension/production at the super-structural level**

According to these data, our hypothesis that “there are no significant correlations between argumentative reading and writing at the micro-structural, macro-structural and super-structural or organisational levels of discourse analysis” is disconfirmed. There are progressive enhancements in the performance of the students on reading comprehension and writing with argumentative texts at the three levels at issue.

### Results of the Second Field Study

The second study was carried out on a randomly selected, small-sized sample drawn from the Department of English, Faculty of Languages and Translation, King Khalid University, Abha, Saudi Arabia. The subjects were all sophomores enrolled in their 4<sup>th</sup> level of study in the English Department. The population of the study were all male (average age 19-20 years). The study involved an analysis of the performance of two groups of students. The experimental group (27 students) was taught the skills of argumentative reading and writing in an integrated approach of instruction for two courses in Reading Comprehension and Academic Writing in the e-learning medium of Blackboard. The control group (25 students) completed the same courses with no particular emphasis on skill integration or the teaching of argumentative written or oral discourse.

Data were collected from pretesting and post treatment testing, and analysed by means of t-tests, run by the Statistical Package of Social Sciences (SPSS), version 14.

### Hypothesis II: Group Equivalence

To test the first null hypothesis in order to make sure that they began the experiment at comparatively similar levels of argumentative reading/writing skills, a t-test was computed to reassure group equivalence; the obtained t-values and their significance levels are shown in (Table 8) below.

**Table 8: Group Equivalence on Pretesting**

Skills	Group	N	Mean	SD	t-value	Sig.
Reading Comprehension	exp	27	22.3333	73598.	0.0534	0.955
	cont	25	22.3226	74776.		
Argumentative Writing	exp	27	25.4242	1.34699	0.0131	0.901
	cont	25	25.4194	1.40888		

The table above demonstrates that there were no statistically significant differences between the experimental and control groups on pre-assessment. In this way, the second hypothesis of the present study was verified, and group equivalence is confirmed.

The other hypotheses of interest were related to the study variables intended to measure students' levels of achievement in two areas of language skills related to argumentative discourse – reading comprehension, and writing as a result of integrated skills instruction. These dependent measures were obtained after experimental participants had completed the argumentative reading/writing course with the integrated skills pedagogy.

### Hypothesis III: Pre/Post-treatment Comparisons

The data presented in (Table 9) show an improvement on pretest/posttest comparisons for all skills; as the t-values indicate, there is a significant difference between experimental and control students ( $p = 0.01$ ) in favour of the experimental class in all skills following exposure to integrated skills instruction. The third hypothesis is, therefore, verified.

**Table 9: Pretesting/Post testing Comparisons of Experimental and Control Group Performances on Argumentative Reading/Writing Performance**

Skills	Group	N	Mean	SD	t-value	Sig.
Reading Comprehension	exp	27	69.0909	73300.	11.961	0.01
	cont	25	66.7742	66881.		
Argumentative Writing	exp	27	84.9394	1.23320	8.833	0.01
	cont	25	78.3871	3.63939		

Based on the results in the above table, the hypothesis suggesting that there are significant differences between both research groups on argumentative reading/writing skills in favour of the experimental group is also now verified; this finding is commensurate with prior research findings indicating that integrated skills teaching is effective in improving language skills improvement (O'Day, 2002; Flora, 1995; King, 1996; Lynch, 1983; Rosenblatt, 1994; Allred, 1994; Oxford & Leaver, 1996; Oxford, 2001).

The gains of the experimental group in improved argumentative writing as a result of training in argumentative reading and writing may be attributed to the emphasis placed on presenting the argumentative writing skills in integration with argumentative reading skills and sub-skills. The experimental writing course grounded in reading argumentative texts was instructionally designed to provide ample time and integration effort for instructional activities in the various sub-processes of reading/writing skills while approaching these skills in an integrated manner. This finding is compatible with other observations and research findings of some authors and critics (e.g., Oxford, 2001; Oxford & Leaver, 1996; O'Day, 2002; Hefferman, 2006).

From a psycholinguistic perspective, the use of reading texts for training in argumentative discourse in reading comprehension provided a platform for the students to activate their schemata on similar topics and on similar linguistic strategies that helped them to improve their argumentative writing; this result is in line with prior research that maintained that reading argumentative texts could help with prior knowledge activation and the definition of discourse genre organization (Kucer, 2001; Reznitskaya & Anderson, 2002).

The use of the medium of Blackboard for teaching argumentative reading/writing made better use of individualized learning processes and social interaction learning tasks specifically designed to develop and improve argumentative reading processes and writing outcomes.

The findings from the study showed that introducing argumentative reading texts plays a major part in the development of argumentative writing. This finding is congruent with prior research showing that e-learning settings play a vital role in students' acquisition of academic literacy (e.g., Berkenkotter, Huckin, & Ackerman, 1991; Faigley, 1985; Herrington & Gadman, 1991; Walvoord & McCarthy, 1990).

Findings from the present study are also compatible with the existing literature on the role of e-learning media in improving academic literacy development. Previous research emphasized the types and nature of argumentative reading/writing tasks students are expected to perform in academic literacy development as well as in other disciplines in which the effects of e-learning technology have been explored (e.g., Braine, 1994; Bridgeman & Carlson, 1984; Carson, 2001; Casanave & Hubbard, 1992; Zhu, 2001; 2004).

In summary, it is believed that integrating the skills of reading and writing in processing argumentative texts in e-learning media was successful in significantly improving the skills proficiency of the experimental group students. Findings from the present study support the idea that teachers should develop appropriate classroom activities that "exploit the potentiality of teaching and practicing reading and writing together" (Parodi, 2003). These findings also support the notion that teachers should introduce cohesion and coherence as important strategies at both the local and global levels of written production to help them produce well connected pieces of writing. Therefore, students should be guided to begin to compose chunks of their texts as semantic units just not as lexical structures, and to treat the writing task as a whole from the beginning of a composition.

### ***Recommendations***

Based on the findings of the present study and the survey findings done by the involved teachers, the following recommendations and implications are suggested for the use of an integrated skills approach in the teaching of the English language skills at the college level:

1. Curriculum designers should develop language skills courses in a fashion that gears integration of both reading and writing and pays tribute to the connections between both skills; as such EFL teachers should receive professional training workshops that brush up on their skills to use an "integration pedagogy" that involves all language skills.
2. For the purpose of effective teaching of language skills according to an integrated pedagogy approach, EFL teachers should be trained to adapt reading/writing materials and argumentative texts to render them applicable for use in argumentative reading/writing tasks.
3. EFL teachers should be trained to manage classroom time efficiently by providing Blackboard assignments and tasks for argumentative reading and writing both formally as graded assignments and in open board discussion threads via Blackboard.
4. EFL teachers should utilise language teaching strategies that make use of improving the students' performance in multiple skills, and reflect the integration of the skills in any language assessment test.

### ***Pedagogical Implications***

1. More research is needed to explore in more depth the various methods used to integrate language skills in the classroom (e.g., content-based, task-based, or a combination).
2. More empirical research is required to tap into the effects of reading/writing integration in longitudinal research designs; this research should be related to research on error analysis in a way that examines the interrelated nature of literacy skills.
3. Prospective research needs to explore the incorporation of literature teaching as an integrated skill instructional methodology for developing language skills.
4. Teachers should use culture teaching in integrated skill instruction in the EFL classrooms.
5. EFL researchers should examine the effects of integrated skill instruction on controlled use of learners' first language in learning the second/foreign language.

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