A Multimodal Approach toward Teaching for Transfer:

A Case of Team-Teaching in ESAP Writing Courses

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Abstract

This paper presents a detailed examination of learning transfer from an English for Specific Academic Purposes course to authentic discipline-specific writing tasks. To enhance transfer practices, a new approach in planning writing tasks and materials selection was developed. Concerning the conventions of studies in learning transfer that acknowledge different learning preferences, the instructional resources were designed to be multimodal to engage all participants in construing the principles of academic writing. To promote the relevance of writing practices and their transferability to future professional settings and to ensure the success of the multimodal presentations, a practice of team-teaching between the English Language and content lecturers was rigorously embraced. A sample population of 28 postgraduate medical students from Jondi Shapur University of Medical Sciences in Ahvaz participated in this research. The data were collected through interviews and writing samples throughout a whole semester and were subsequently analyzed both quantitatively and qualitatively based on James' (2009) checklist of writing outcomes. The results indicated that the instruction did stimulate transfer from the course to the authentic tasks notably in the skills associated with organization and language accuracy; however, the transfer of some outcomes appeared to be constrained particularly the use of punctuation marks. Implications of the findings for theory, practice, and future research in discipline-specific writing practices are discussed.

Keywords: academic writing, ESAP, learning transfer, multimodality, team-teaching

Academic writing has long been recognized as an indispensable skill university students need to master (Baily, 2010; Swales & Feak, 2012); however, it has grown to be a concern because the postgraduates are following higher education to undertake more specialized tasks (Gimenez, 2008; Staples, Egbert, Biber, & McClair, 2013). As the kinds of organizations and the jobs that they will enter have become more specialized, writing has become more specialized, as well. Graduate students need a vast repertoire of linguistic knowledge and skills to successfully enter professions. Hence, they will have to employ a greater linguistic and rhetorical flexibility to obtain certain degrees of visibility in their professions and institutions via the specialization of writing (Bjork, Brauer, Rienecker, & Jorgensen, 2003). Currently, this specialization leads researchers and practitioners to embrace more discipline-specific approaches toward English for Specific Academic Purposes (ESAP).

In the field of ESAP, what is crucially important and deserves attention is that when students are taught to write academically, the instructed knowledge and skills will be accessible in later settings (Subedi, 2004). This concern is what scholars address in *teaching for transfer* (Green, 2015; James, 2006; Norman, Dore & Grierson, 2012). Researchers have sought to answer the question why learners often fail to activate their learned knowledge, a failure termed "the inert knowledge problem" (Whitehead, 1929, pp. v) which is not only academically threatening but also individually and socially alarming (Larsen-Freeman, 2013). Students withdraw from learning English when they realize they cannot utilize what they have worked so hard to accomplish within English courses; English language instructors abandon their resourceful practices when they learn about learners' low attitude; and not really seeing any improvement, curriculum designers depreciate any attempt to resolve the issue. Although these successions have serious consequences, there is little agreement among scholars about the nature of transfer, the extent to which it occurs, and its underlying mechanisms (Barnett & Ceci, 2002, James, 2006, 2014).

So far, the obscurity over the details of learning transfer has been attributed to the complex nature of transfer, as it can be influenced by multiple factors and can occur in multiple ways (James, 2014, pp. 2). Barnett and Ceci (2002) devised a transfer taxonomy and defined training design and delivery modes as two determining factors that might influence the process of transfer. In his study of the emerging trends of research on learning transfer, Subedi (2004) adds two other categories of influential factors: learner characteristics and organizational or workplace characteristics. Apparently, in a classroom setting, all students have unique and complex systems of thinking and hypothesizing that result in multiple learning preferences. Individuals characteristically acquire, retain, and retrieve information in accordance to their distinctive preferences that perceptibly affect the mode of learning. Henceforth, a multimodal approach, a situation where the input is provided through a combination of written, auditory, and/or visual modes, is inspired to meet the requirements of diverse learning styles. Mayer (2014) maintains that three cognitive processes are required for meaningful learning: selecting, organizing, and integrating; the multimedia techniques aim to promote learning through priming these processes. Multimedia instruction helps learners understand concepts with the use of words and images (Sweller, 2010). However, despite the importance of a multimodal approach, little is known about the effects of multimodal representations on learning transfer of academic writing skills particularly in discipline-specific learning contexts.

Looking at the variety of critical approaches to academic writing practices commenced in the educational contexts of Iran, many researchers have so far attempted to investigate different facets of writing practices (Abasi, Akbari, & Graves, 2006; Aidinlou, 2011; Baradaran & Sarfarazi, 2011; Jamalinesari, Rahimi, Gowhary, & Azizifar, 2015; Memari Hanjani & Li, 2014); however, studies on transfer of academic writing skills and its challenges are rather scant mainly in the area of medical sciences.

Research Questions

Considering writing as a major concern for postgraduate learners (Baily, 2010; Hüttner, 2008; Swales & Feak, 2012) and stimulated by multimodal pedagogy and the significance of future transfer of instructed skills, this study sought to provide postgraduate medical students with the space to engage and interact in moments of meaning-making via writing tasks. To ensure the relevance of writing skills to the disciplinary requirements and their transferability to future professional settings, a practice of team-teaching between English Language and content lecturers was encouraged. Accordingly, the following research questions were raised in this study:

1. To what extent does the collaborative multimodal input facilitate the process of learning transfer in postgraduate students of medical sciences?

2. Which writing outcomes will transfer to authentic writing tasks? Which ones will not? Why?

Method

Participants

The present study was undertaken in 2015-2016 at Jondi Shapur University of Medical Sciences in Ahvaz. The researchers set up a purposive, nonrandomized sampling procedure to check the effects of teaching for transfer in writing courses for medical students. To decide on the disciplines, a survey was commenced over different colleges with postgraduate students, personnel in administration, and the faculty members of departments to check which disciplines appreciated the importance of academic writing practices, publishing in English, and international visibility. Moreover, the documentation of Vice President of Research and Technology Development of the university within one academic year was assessed to find out the number of English published articles of each faculty. Accordingly, the two leading disciplines were confirmed, Dentistry and Pharmacology. These faculties were almost identical in the following practices: according to the design of their

postgraduate programs, several courses were held preferably in English; the specialized resources depended mainly on English textbooks; and notably, a publication in English was prerequisite for thesis submissions. Henceforth, the participants valued academic writing practices voluntarily.

All the 13 postgraduate students of the Pharmacology department and the entire group of first year dental residents from the college of Dentistry took part in this experiment. They had all passed around 15 credits of general and discipline-specific English courses in their undergraduate programs; therefore, it was assumed that they were relatively ready to take a structured writing course in English. However, two Dentistry participants withdrew from the program as they failed to respond the writing inquiries of the pretest session. The average age of the participants and their gender in each discipline is summarized in Table 1.

Table 1

Participants' Gender and Age Range

Disciplines	Age Range	Gender
Dentistry	25-35	4 Males- 11 Females
Pharmacology	23-32	4 Males- 9 Females

The second sample population comprised two specialized associate professors, one from each discipline. They were considered as a valid reference for materials selection and tasks design throughout the study and were mainly selected according to their perceived academic status by the university research center. To conduct the multimodal ESAP designed courses for the two groups, one of the researchers acted as the English Language lecturer and instructed each group separately. She was a PhD candidate in Applied Linguistics and had taught Medical English for eight years at Jondi Shapur University of Medical Sciences.

Materials

To create a list of writing outcomes for the sessions of writing instruction, 16 books on academic writing instruction were reviewed and ultimately four textbooks were chosen as the base materials of the study. These involved (a) *Academic writing: A handbook for international students* (Baily, 2010), (b) *The complete guide to medical writing* (Stuart, 2007), (c) *Academic writing for graduate students* (Swales & Feak, 2012), and (d) *Medical writing: A guide for clinicians, educators, and researchers* (Taylor, 2011). The books were selected according to their relevance to the context of this experiment and due to the fact that they were among the most regularly practiced resources for academic and medical writing in distinguished medical universities, including University of Michigan, University of Buckingham, and King's College London. Furthermore, the four books follow nearly the same rhetorical organization and their authors and editors have mutually admitted that the textbooks are designed to address people who are nonnative speakers of English and are studying at graduate levels through or partly through the medium of English. All these traits were optimally relevant to the setting of this experiment.

Based on the above textbooks and through sessions of discussion and consultation between the English Language and content lecturers, a variety of writing tasks were designated to foster general and discipline-specific writing skills. The rationale for observing this cooperation in devising a writing task portfolio specific to each discipline was relevant to what James (2009, pp. 69) rightly notes that there may be a "significant mismatch between the kinds of writing students do in an English as a Second Language (ESL) writing course and the kinds of writing they are expected to do in other academic courses" or even in prospective professional settings. This is what ESAP lecturers should be definitely attentive to and consistently invest time in.

Instruments

Three tests of academic writing skills. To trace the state of variance in the participants' writing performance, three separate sets of writing tests were administered for each group by the English Language lecturer, pretest, posttest, and delayed posttest. To increase the relevance of the tests to the disciplinary content and writing conventions and also to observe the criteria of content validity, sessions of discussion were run with the collaborative content lectures.

The pretest was held to evaluate how much the participants were aware of the essential writing models specific to their disciplines. Upon the completion of the training program and parallel to the pre-test, the post-test session was arranged for each group to check the effects of collaborative multimodal training sessions. After two months, the delayed posttest was administered to see if the participants could retrieve and employ their multimodal team-teaching instruction in authentic writing tasks. In the course of the three testing sessions, the participants watched a video excerpt, read a pertinent text, and next were required to answer the questions through organized paragraphs.

The focus group interviews. Proceeding toward a fuller understanding of individuals' perceptions of transfer facilitators and to supplement the quantitative analysis of the study, semi-structure and focus group interviews were run after each training session by the English Language lecturer over groups of four to five. The criteria for the inclusion of participants in each group was their initial writing scores in the pretest session.

The enquiries were open-ended, allowing new ideas to be brought up during the group discussion as a result of what the interviewees said. The questions were based on the model provided by James (2012); the original model included 11 items; however, for this study, 3 questions that were implicitly repeated in other items were deleted. Also two items were added from James' (2010) model. The two models checked the practice of learning transfer through semi-structure and focus group interviews. In this way, the interviewer probed deep into students'

attitude toward the multimodal ESAP course and their appreciation of the role of academic writing within and beyond university program (see Appendix 1).

Scoring instrument

James' (2009) checklist of writing outcomes. Motivated by the similarity of the objectives of the current study and James' (2009) research, emphasizing the instruction of discipline-specific writing skills and examining the act of transfer in academic settings, this study followed James' checklist of writing outcomes to assess and analyze participants' writing paragraphs. The checklist encompasses 15 writing outcomes that target three categories of organization (items 1-7), content (items 8-12), and language use (items 13-15). To assess the use of each outcome, James (2009) developed a four-point scale (i.e., 0 = no use of learning outcome; 1 = minimal use of learning outcome; 2 = moderate use of learning outcome; 3 = extensive use of learning outcome). The model will later be presented in the manuscript.

Procedures

For this study, data were gathered through pretest/posttest design procedure: a pretest of writing skills, instruction of writing skills, a posttest on writing skills, focus group interviews, and a delayed posttest on authentic writing tasks.

To administer the pretest session, two essential concerns were essentially observed: first, the session needed to be multimodal; second, it was expected to be discipline-specific. Accordingly, the participants watched a piece of video and read a text about professional challenges pharmacists and dentists would face internationally and were then asked to answer two questions about their estimations of the same issues in Iran. The answers were intended to be in the form of two organized paragraphs; the first was expected to be descriptive as the participants were to describe the challenges they might encounter having the status of dentists or pharmacists in Iran; the second needed to be explanatory as

the participants were asked to explain the reasons for the current national and international states of affairs.

The essays were assessed and analyzed following James' checklist of writing outcomes. To check the reliability of James' (2009) checklist for the current context and the consistency of the researchers in scoring the essays, another EFL writing researcher who had experience with writing performance scoring was invited to score 30% of pretest transcripts (9 random samples). The raters independently scored the selected essays for use of the 15 writing outcomes. To check the reliability of this analysis procedure, Pearson correlation coefficient was calculated for the two independent raters' scores as they were measured on an interval scale. A comparison of the second rater's decisions with the researchers' evaluations over the scores of the 15 writing outcomes resulted in an intercoder reliability value of 0.942 which was statistically significant ($r = 0.942$, $n = 9$, $p < 0.01$).

Following the pretest session, the training program commenced. As the researchers tended to adopt a multimodal approach to the development of academic and medical writing skills, the classes were arranged to be held in rooms equipped with computers and video projectors. The program consisted of 12 ninety-minute sessions that lasted a whole semester. The sessions were administered in due colleges where classes for core disciplinary courses were run. For the first preparatory week, attempts were made to provide the participants an overview of the established standards of academic writing practices. Through the next three weeks, the instruction dealt with paragraph organizing, essay planning, and familiarity with the overarching patterns in English expository prose, the movement from general to specific and from problem to solution. Then, through later sessions, the discipline-specific writing models were instructed, exemplified, and analyzed through visual aids. The models for Pharmacology group included case report, summary, description, cause-effect, compare-contrast, and argumentation. Concurrently, the dentistry participants received

instruction on explanatory, cause-effect, descriptive, formal letters, reporting, summary, and argumentative rhetorical patterns.

Subsequent to the session of rhetorical pattern instruction, a practice session was run in which a novel topic, suggested by the content lecturer, was introduced. Based on the suggested topic, the English Language lecturer surfed the internet to find relevant video excerpts (for some subject matters, content lecturers had their own preferred video clips). At least three excerpts were selected and presented to the content lecturer for each topic. Concerning the relevance, novelty, and comprehensibility of the videos, the content lecturer selected one of the excerpts. The two groups watched their finalized video excerpt which familiarized them with the topic in focus. The video excerpt was replayed two times if the participants wished. These procedures were followed by the collaborative professor of each discipline separately.

As not all the participants appreciated audio-visual inputs or they still needed further information, a text over the same topic was displayed by an image projector. To select a germane text, similar steps were followed as for the selection of videos. The text was accessible for a limited time, long enough to ensure that the participants had definitely read it. However, it was closed after the due time so that the participants could not copy the sentences and utilize them directly in their final writing papers of that day. The text was not meant to be the transcription of the video clip. Instead, it explained the topic in more technical details. Ensuring that learners were equipped with sufficient information to start their practice of writing according to the instructed rhetorical pattern and based on the topic they had watched and read about, the English Language lecturer allowed the participants to put pen to paper. The papers were checked based on the checklist and returned to the individuals a session later so that they could note their writing mistakes and would be alarmed of organization, diction, punctuation, and their structural problems. To complement the quantitative analyses of the written essays, focus group interviews were run at the end of each training session with the intention of checking the participants'

evaluations of the treatment they had received. These phases recurred comparably for all the selected writing skills to the end of the semester.

Upon the completion of training program, the participants were ready to sit for the posttest. After the participants watched a discipline-specific video clip and read a germane text, they were asked to answer two questions; the answers to these questions were intended to be open-ended, in the form of an organized paragraph with a specific rhetorical pattern. Parallel to the scoring procedure of pretest session, the essays were rate based on James' (2009) checklist. To check the test reliability, the same measures as in the pretest session were reiterated; a comparison of 30% of posttest transcripts (9 random samples) rated by the other rater with the first rater's decisions over the learning outcomes resulted in an intercoder reliability value of 0.903 which pointed to a strong, positive correlation between the two raters ($r = 0.903$, $n = 9$, $p < 0.01$).

Two months later, the participants assembled for the delayed posttest to demonstrate how they could retrieve their instructed knowledge. Through this session, they watched a piece of video, read a pertinent text, and then were asked to develop well-organized paragraphs in response to two questions. The only point that distinguished this session from the prior tests sessions was the fact that it was conducted by the content lecturer in the format of an English journal club where participants were required to write an organized essay about the issue that was visually presented and discussed. Hence, the context would resemble a professional setting where practice and test of the learning transfer could be more genuine. Measures of content validity and scoring reliability were verified parallel to the procedures assumed in the pretest and posttest sessions; for the interrater reliability, a statistically significant correlation was observed between the two raters ($r = 0.858$, $n = 9$, $p < 0.01$).

Data Analysis

To arrive at plausible answers to the first research question which focused on the overall impact of a collaborative multimodal approach to

transfer of learning, the state of variance was traced from the pretest to the posttest and finally to delayed posttest so that any possible improvement or variation could be highlighted. For this purpose, paired-samples t-tests were operated. Regarding the transferability of writing outcomes enquired by the second research question, it was essential to check which writing tasks were manifested consistently in participants' weekly submissions, their posttest and finally in the delayed posttest. Accordingly, all the essays were assessed and codified employing James' (2009) checklist of writing outcomes. The codified data would reveal which writing outcomes were mostly or rarely followed through the 12 training sessions. Additionally, to supplement this quantitative analysis, focus group transcripts would be essentially pondered upon in discussion section.

Results

To spot a pattern and find a trend in the overall results, the mean scores of the participants' writing outcomes in the three testing sessions are summarized in Table 2. Accordingly, Dentistry ESAP participants demonstrated higher control over the writing outcomes initially and finished with superior results compared to the group of Pharmacology. The Dentistry group still continued their trend of improvement in delayed posttest through the authentic writing task (from 20.73 to 21.8). On the other hand, as the results in Tables 3 and 4 specify, the Pharmacology participants significantly upgraded their writing skills from pretest to posttest sessions yet they could not completely retrieve and transfer their learned skills from the posttest to the authentic writing practices of delayed posttest; their total mean scores receded slightly from posttest to delayed posttest sessions (from 15.92 to 15.38). Perhaps, the initial levels of writing proficiency and the departments varying emphasis on English practices had played seminal roles in the differences between the groups of participants. For a detailed appreciation of the effects of the design of this study, the results are presented and discussed below.

Table 2

Summary of the Mean Scores in Pretest, Posttest, and Delayed Posttest Sessions

Mean scores of groups in pretest (1), posttest (2), and delayed posttest sessions (3)	Pharmacology			Dentistry		
	(1)	(2)	(3)	(1)	(2)	(3)
1. Introducing the topic	1	1.9	2	1.46	2.2	2.1
2. Using a conclusion	0.61	1.07	0.92	1.2	1.6	1.3
3. Using logical sequence	1.15	1.53	0.92	1.33	1.73	1.73
4. Using cueing statements	0.76	0.84	1.15	0.73	1.4	1.13
5. Using connectives	0.2	1.07	1.3	1.06	1.13	1.06
6. Using cohesive devices	0.38	0.69	0.61	0.86	0.93	0.66
7. Following the rhetorical pattern in focus	1.3	1.61	1.53	1.33	1.8	1.86
8. Describing	1.3	1.84	1.5	1.66	2	2.66
9. Exemplifying	1	1.38	1.15	1	1.46	1.46
10. Comparing/contrasting	0.69	1.07	1.08	0.33	0.8	1.73
11. Defining	0.76	1.07	0.92	0.8	0.93	0.66
12. Classifying	0.92	1.07	0.92	1.06	1.53	1.66
13. Avoiding missing commas after introductory elements	0.15	0.15	0.23	0.06	0.33	0.66
14. Avoiding fused sentences	1.23	1.9	1.86	1.73	1.8	1.53
15. Avoiding sentence fragments	0.92	1.38	1.38	1.2	1.06	1.2
Total scores	10.36	15.92	15.38	15.93	20.73	21.8

To arrive at plausible answers to the first research question which inquired the extent to which the collaborative multimodal input facilitated the process of learning transfer, the state of variance from the pretest to posttest and from the pretest to the delayed posttest sessions was inferentially traced so that any possible significant variation could be highlighted. For this purpose, paired-samples t-test was operated. The results of each group performance are summarized below in Tables 3 and 4.

Table 3

 Paired Samples T-test: A Comparison of both Groups' Mean Scores on Pre-test and Post-test

	Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Dentistry	.32600	.19065	.46135	5.166	14	0.000143
Pharmacology	.38067	.24522	.51611	6.028	14	0.000031

Concerning the output of Table 3, it can be concluded that a statistically significant difference existed between the two variable scores for Dentistry group (t (14) = 5.166, p = 0.000143) and for the Pharmacology group (t (14) = 6.028, p = 0.000031). Hence, the ESAP collaborative multimodal writing instruction proved to have a significant influence upon the gain of the two medical groups.

To check the significance of transferability of writing outcomes, the results of the pretest and the delayed posttest were compared to delineate how much participants could retrieve their writing skills after two months of not having any instruction. Table 4 below encapsulates the obtained results.

Table 4

Paired Samples T-test: A Comparison of Pre-test and Delayed Post-test Results

	Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Dentistry	.39267	.14286	.64248	3.371	14	0.005
Pharmacology	.34267	.19652	.48882	5.029	14	0.000184

Based on the above results, strong evidence exists for Dentistry group (t (14) = 3.371, p = 0.005) and for Pharmacology group (t (14) = 5.029, p = 0.000184) that the collaborative intervention plus multimodal

presentations improved transfer of academic writing outcomes. The treatment improved each writing strategy of Dentistry and Pharmacology participants, on average, by approximately 0.39 and 0.34 point. The 95% confidence intervals for the difference were (0.142, 0.642) and (0.196, 0.488) for Dentistry and Pharmacology groups, respectively.

For the second research question, regarding the success of transfer, it was essential to check which writing tasks were manifested consistently in participants' weekly submissions that equated to 364 essays. Accordingly, the researchers scanned the whole essays from the pretest sessions to the delayed posttest to spot which writing outcomes had been regularly applied. To check this regularity, all the essays were evaluated based on James' (2009) writing outcome checklist. Table 5 sums up the writing outcomes that were mostly *or* rarely followed within the two medical disciplines throughout their multimodal ESAP course. Following James' (2009) method of analysis, to detect patterns in the obtained results and discuss the relevant findings, the 15 writing outcomes were divided into three categories of organization (items 1-7), content (items 8-12), and language use or accuracy (items 13-15).

Table 5

Frequency of Practiced Writing Outcomes

Number of students observing the strategies consistently in their essays	Mostly followed		Rarely followed	
	Pharmacology	Dentistry	Pharmacology	Dentistry
1. Introducing the topic	12	14	-	1
2. Using a conclusion	6	14	-	1
3. Using logical sequence	6	12	-	1
4. Using cueing statements	4	9	1	1
5. Using connectives	7	5	1	1
6. Using cohesive devices	1	3	7	12
7. Following the rhetorical pattern	11	10	-	-
8. Describing	11	11	-	-
9. Exemplifying	8	8	-	-
10. Comparing/contrasting	2	4	-	8

11. Defining	3	5	-	4
12. Classifying	7	-	-	11
13. Avoiding missing commas after introductory elements	-	2	10	12
14. Avoiding fused sentences	9	13	-	1
15. Avoiding sentence fragments	9	12	-	3

As the data in Table 5 indicated, fourteen out of fifteen Dentistry participants were consistent in their practice of *introducing the topic* and *using a conclusion*; only one student failed to accomplish these two tasks. The next mostly observed strategy was *avoiding fused sentences*; thirteen participants completed all their papers while they had avoided fused sentences. Twelve participants also had consistency in *using logical order* and *avoiding sentence fragments*. The next prevalent strategies were *describing* and *following the rhetorical pattern*; respectively, eleven and ten participants observed these two outcomes recurrently. Less frequent but still noteworthy writing skills documented in this group were *exemplifying* and *using cueing statements*; such writing outcomes were detected in eight and nine ESAP learners, respectively.

Some of the above findings also applied to the Pharmacology group but in a different frequency order except for *introducing the topic* which again represents the best practiced strategy; concerning the written essays, twelve out of thirteen Pharmacology participants could consistently introduce the main and supporting ideas in their writing practices though their levels of appropriateness varied. As the next characteristically applied strategies, *describing* and *following the rhetorical pattern* were perpetually monitored in writings of eleven participants. *Avoiding fused sentences* and *avoiding sentence fragments* were equally considered practically by nine participants. The two other outcomes that were less frequently observed in this group, compared to the Dentistry group, yet appear to denote a pattern specific to the

Pharmacology group were *exemplifying* and *classifying*; respectively, eight and seven participants accomplished these two writing outcomes regularly over the entire practiced writing tasks.

Discussion

To argue about the significance of the induced results of the first research question, it appears that two simultaneous factors (i.e., multimodality and collaboratively designed syllabus) played their influential part. The plausible effects of each one are discussed below, respectively.

The use of multimedia in this research supported Mayer's (2005) claim that learning was enhanced when words and pictures were used together. In this context, words included written and spoken texts, and pictures included discipline-specific video clips. Obviously, it has been presumed that not every multimedia presentation can positively affect learning outcomes (Guan, 2009; Montazemi, 2006; Rasch & Schnotz, 2009). In this investigation, the researchers purposefully followed an instruction scheme that did not split the participants' attention from the content and context of their disciplines. The participants appeared to be more focused as their attention to the information was closely tight to the specificity of their disciplines. This finding was generally in line with the study of Mayer and Sims (1994) who observed when related information was not presented, learner attention was split and the brain had more work to do to integrate the disparate sources of information. Research suggested that precious brain resources should be focused on essential information aligned to instructional goals (Issa, Schuller, Santacaterina, Shapiro, Wang, Mayer, & Da Rosa, 2011). Multimedia designers of this study and the users benefitted well as the temptation to present extraneous information was resisted.

A point that researchers in the domain of transfer studies are usually warned against is to avoid redundant information in training and testing sessions so that the genuine traces of transfer can be more reliably checked (James, 2009). By the help of the specialized lecturers, the

topics, texts, slides, and video clips applied in this study presented novel discipline-specific issues. In the follow-up discussions and focus group interviews, nearly all the ESAP learners expressed their gratification toward the innovations present in the instructional materials. Therefore, it can be inferred that the significance of the results in terms of learning transfer may by some means be due to the novelty factor. This finding is in good agreement with the studies by Kalyuga, Chandler, and Sweller (1999) and also Mayer (2003) who found that students learned more when redundant information was excluded from a multimedia presentation.

To simulate standardized language proficiency tests, normally aural-visual data are presented to the learners only once. However, in this study, to arrive at meaningful results, through all the training and testing sessions, multimedia presentations were replayed twice and occasionally three times if required; along these lines, it could be concluded that the learners had more chance to interact with the materials. Considering the fact that not all students learn at the same pace, Mayer, Dow, and Mayer (2003) similarly show that when learners are able to adjust the pace of the presentation, they learn more; they infer that multimedia practice is more effective when it is interactive and under the control of the learners.

Prior to the multimodal presentation in each session, students received a preview of the session content and tasks via a discussion over the topic and the rhetorical pattern in focus with the purpose of activating relevant knowledge structures. This endeavor proved to be effective and supported the studies undertaken by Pollock, Chandler, and Sweller (2002) and Kalyuga (2005) who realize that multimodal learning is enhanced when the structures for organizing the information are activated. Activation can be accomplished by familiarizing learners to the content through demonstrations, discussion, directed recall and written descriptions. The current study similarly followed some of these preview activities that were directed at activating prior knowledge, signaling what is important, and showing how the content is organized. Hours of instruction to the ESAP students revealed that reviewing technical

expressions to be encountered and class discussion over the issues were helpful in activating prior knowledge. Recalling the earlier discussion about how the brain processes information, these preview activities helped activate existing schema (organizing structures) and created new schema to make it easier to absorb the new information in the presentation. Activating knowledge is proved to help provide a structure from the long term memory to understand and organize the new information from the working memory (Mayer, 2008; Ruiz, Cook, & Levinson, 2009).

One important aspect of the training sessions in this venture was to offer written feedbacks to all participants' essays; the main objectives of providing feedbacks were to make the process of writing more productive and extending opportunities for student self-assessment; considering the fact that all the participants of this study were post-graduates, the researcher realized that it was important not to disregard the desires of the participants as to the types of feedback they preferred to receive. Hence, the reader initially admired the positive points of each written paragraph and then suggested how to improve the flawed sections. Consequently, it was documented that participants were supplied with the possibility to apply what they had learned to following exposure. It seems that these measures and the obtained results are compatible with Fregeau (1999) who notes that students want to participate in a process approach to writing that allows for multiple rewrites as well as conferencing of some sort. Mayer (2005) also admits that feedbacks are sorts of follow-up activities that help individuals integrate what they have learnt; feedback is an important part of the learning process, and multimedia is no exception. Likewise, Gee (2005) and Perkins (1992) approve the importance of providing clear and encouraging feedbacks to the learners about their progress on an ongoing basis. Feedback helps keep learners informed about their progress and helps them stay engaged (Gee, 2005); providing feedback can reinforce what has been learned and can also correct any misconceptions. The weekly administration of the writing sessions in this study evokes

Williams' (2003) emphasis on the issue of regularity; he insists that feedback is most effective when it is frequent and immediate.

Research has witnessed the ability of multimodality to make information available more quickly through individuals' preferred learning (Camiciottoli & Fortanet-Gómez, 2015; Souzandehfar, Saadat, Sahragard, 2014). In this investigation, participants of the medical groups frequently appreciated the multimodal instructional tools though the results suggest that multimedia worked better for some learners than others. Although the material presented to the participants included both audio-visual and written text, few students reported that they felt disappointed if they could not manage the video-clips and soon they would surrender. Multimedia learning may be particularly effective for visual and auditory learners (Institute for Learning Styles, 2008).

As the second component of the first research question, collaborative decisions of English Language and content professors appeared to facilitate the act of learning transfer. Among other factors, it seems that this collaboration revitalized the status of the English lecturers and consequently played a meaningful role on the significance of the above results. One of the main purposes of this study was to propose revisions to the contexts of ESAP instruction in Jondi Shapur University of Medical Sciences where the position of the English Language lecturers was not adequately appreciated. The team-work of current study brought about constant chances of negotiation between the content and English Language lecturers and fortunately bridged the gap that existed between these two realms of knowledge in a way that both lecturers' instructional innovations and participants' involvements were practically augmented; the English lecturers had more confidence as the collaboratively decided topics and writing styles were perfectly in tune with the requirements of each discipline and seeing a recognized professor of their own department behind the design of the study, the participants would embrace and transfer the learned tasks more readily. This observation corresponds with research in academic writing that warns ESAP practitioners of the consequences of such gaps and recommends that

lecturers should gain acquaintance with the conceptual matters of disciplines and know how English language is used to represent it (Murata, 2010; Robinson & Schaible, 1995).

The other benefit of the collaborative course structure of this investigation was the enhanced teacher-student relationships. The regular presence of participants, although the course was not obligatory, and their active participation in follow-up discussions revealed that the classes were beneficial primarily by being more interesting and challenging. Equally perceived by Friend (2008), when participants recognized that the material and the pacing of instruction were in-depth association with the level of their knowledge and abilities, positive classroom atmosphere conjured and this led to improved teacher-student relationships. This finding seems to be in harmony with a study by Reiter-Palmin and Illies (2004) which assumes that professionals who share instruction can combine their knowledge and skills to create learning environments in which instruction is rigorous, flexible, and accommodated to each student's unique learning requirements.

Research confirms that while a great deal of support exists in favor of team-teaching practices across disciplines, still collaborative classrooms represent the exception rather than the rule (Fenollera, Lorenzo, Goicoeceha & Badoui, 2012; Górska-Poręcka, 2013). Despite the benefits for the participants and professors, multifaceted problems were also encountered throughout this and similar experiments. Meirink, Imants, Meijer, and Verloop (2010) touched on one of the immense difficulties of collaborative approaches which remained extremely demanding, that is how to organize responsibilities; this complexity was observed frequently even by experienced team teachers (Kuusisaari, 2014; Tillema & van der Westhuizen, 2006). For the current research, this phase took several months and required bounteous resourcefulness especially in planning stages and material collection. The burden for planning was doubled as the study addressed postgraduate students. In Jondi Shapur University of Ahvaz, professors and students at higher educational levels were usually so overwhelmed with their academic

requirements that they would reject any further programs; therefore, the researcher needed to be utterly persuasive in submitting the designed methodology and the expected final outcomes. On the other hand, as the experiment meant to be multimodal, the process of material preparation developed laboriously. The multimedia presentations for each session needed to be checked collaboratively with the specialized professors to see whether slides and the video clips were in a good match with both the assigned discipline-specific topics and the rhetorical writing patterns in focus. These procedures were intensely long and slow that would halt any exploratory deeds.

Conderman and McCarty (2003) note that successful co-teaching is more than planning lessons in which both educators are integral. They argue that simple matters, if clarified, are easily resolved, but if not clarified sometimes lead to misunderstandings that restrict co-teaching success. Likewise, Cohen and DeLois (2001) caution that hierarchical leadership increases the possibility of additional teamwork problems. Rothman (1980) contends it is more effective to have a single leader for group facilitation, but Levine (1980) argue that co-leadership can have better outcomes. Concurrent with Rothman (1980) and regarding the fact that this study was the first team-work experience administered then and there, a single leader for the groups was assumed to be an excellent opportunity to model a collaborative syllabus for the nominated participants. The design of this study relied on effective and ongoing communication; the lecturers' roles were clearly defined at the outset of the inquiry and it was assured that although there would be a team leader, all decisions would be consensual. Remarkably, this ongoing experience disclosed that collaboration ended in success when the ideas were refined through negotiation. The continuous proposing of thoughts or plans, followed hurriedly by acceptance or rejection, did not seem to lead to any improvement. This finding corresponds with what amazed Kuusisaari (2014) that the acceptance of ideas too readily inhibits or even completely prevents development.

The other measure that probably had positive influences on the significance of the obtained results was the university and departments supports for the team-work, cross-discipline classes of this research. Contrarily, Graziano and Navarrete (2012) demonstrate that departments appraise team-work negatively and occasionally maintain that team teaching interferes with research even more than the regular teaching regime because of the additional time involved. Fortunately, this study benefited the support and the respect of the departments for the administration of this teamwork toward fostering transfer of writing instruction to authentic practices. This may be above all due to the fact that the study aimed to address an issue that the departments were chiefly suffering from, that is improving academic writing skills as a promising means to publish their research papers and as the key to gain international visibility. Thus, the professors willingly invested their time in this type of collaborative work. It is strongly argued that a necessary component for successful team-teaching is to have institutional sanction and department support.

The findings for the second research question indicated that while transfer of writing outcomes from the multimodal training sessions to the authentic writing task of delayed posttest did occur, it was restricted for some outcomes but considerable for others. At the onset of this investigation, one of the main areas of weaknesses that participants were not directly aware of and certainly led to inefficiency of their written practices was unfamiliarity with *organizational principles* of writing. Most of the participants reported that, prior to this study, they used to write in English intuitively and lacked any explicit knowledge of conventions about rhetorical patterns in academic writing. Interestingly, to the end of the semester, both Dentistry and Pharmacology groups, of course to differing degrees, proved to be successful in transferring four out of seven writing outcomes that addressed essay organization, including i*ntroducing the topic, using a conclusion, using logical order, and following the rhetorical pattern*. This finding is in a good agreement with what Evans and Green (2007) experienced in their research about

the necessity of ESAP courses; they realize that learners are better in improving organization, which tends to be the focus of the revision process than proofreading, a process that typically involves correcting grammar, vocabulary and punctuation. On the other hand, Hansen (2000) argues that college students may do well in fulfilling the requirements of text structure as they may assume the English lecturers value such features more than the features that concern content; consequently, to get a better score, they may excel in observing the overall organizational pattern. However, Hansen's conclusion does not seem to be quite valid in this context since the learners participated in this study voluntarily and there was no pass or fail grading system at the end of the semester.

Considering the five outcomes that were exercised to develop the *content* in essay writing, the two groups of participants concurrently transferred their received instruction except for the technique of *defining*. As the above results indicate, the four techniques of *describing, exemplifying, comparing/contrasting*, and *classifying* were positively employed to develop the specifications of topics; however, the participants seemed to be still immature to *define* content details. Overall, this result can be assumed as a triumph for this study since the literature on transfer of writing skills has scarcely demonstrated improvement in transferring discipline-specific content outcomes subsequent to English courses. So far, research has shown that in writing for a nonspecialist audience, including an English lecturer, learners must moderately simplify the content; besides, they cannot rely on shared information, which they would be able to if they were really writing for their specialized professor because their ESP lecturer may not understand the subject (Anderson, 2014; Hansen, 2000). In fact, it appears that to resolve these conflicts, a student may choose to write for the instructor, concentrating on rhetorical and grammatical conventions to receive a passing grade. To Hirvela, Nussbaum, and Pierson (2012), this is clearly writing for the instructor's discourse community and expectations, rather than the learners' which seriously question the validity of academic English courses. In the context of this study, however, the reverse

happened; repeated exchange of medical issues, regular use of technical terms, and intense debates over the subjects in follow-up discussions indicated that the participants had valued the design of the ESAP multimodal course; this result could be attributed to the fact that the participants could perceive the presence of their specialized professor within the selection of the topics and the designated rhetorical patterns that were organized via an exhaustive teamwork of English language and content lecturers.

Regarding the category of *language use* and *accuracy*, it appears that both Dentistry and Pharmacology groups consistently avoided sentence fragments and fused sentences in their writing tasks. Right from the start, the ESAP participants admitted their weaknesses in language accuracy and appreciated any explanations that would help them revise their grammatical errors. Hence, they acknowledged relevant writing outcomes readily and consequently succeeded to transfer their learned structural knowledge to the writing tasks throughout the sessions. This finding is in line with what Hansen (2000) encounters in her study regarding the transfer of sentence structure; she finds that ESAP students feel most comfortable with the instructor commenting on grammar, for this fits into their expectations and prior experiences of English-language education. Hansen (2000) thus concludes that it may not be the skills or strategies themselves that determine the extent of transfer from ESAP to content courses but rather the values learners place on the specific skills.

From the same category of language accuracy and as the least transferred writing outcome, *avoiding missing commas after introductory elements* stands noticeable. While the English language lecturer recurrently alarmed participants of the role of punctuation especially commas for allowing a reader to analyze a sentence efficiently, understand the intended meaning, and read more quickly, only a tinge of transfer was traced; just two Dentistry participants and no Pharmacology students consistently put commas after introductory elements. At first glance, the reason seems a bit obscured as Hirvela et al. (2012) rightly note, little is known about how ESAP students feel about using English

punctuation and the small body of published literature about punctuation tends to look at ways in which punctuation can be taught. Hirvela et al. (2012) argue that L2 learners may have different notions of how punctuation functions based on its use in their native language. Unfortunately, few systematic studies have so far addressed the differences between the punctuation systems of Persian and English and the possible consequences. Research reveals that Iranian L2 learners frequently appear to pay little heed to such typographical devices (Sojudifar, Nemati, & Falahati, 2015). Mohamadifar (2002) considers this issue historically and asserts, "the history of punctuation in Persian writing is not very old and it did not exist in classical writings. Its usage goes back to the advent of press industry in Iran" (pp. 439). The focus group transcripts concomitantly revealed that participants had rarely been alerted to be accurate in using graphic features like commas from school time; therefore, it seems impossible to revise this alarming trend within the training sessions that lasted only one semester.

For a detailed discussion of differences between the conventions of punctuation in difference languages, Salem and Lawless (2011) believe that orthotypographical differences are not trivial; they represent different ways of conceptualizing punctuation and can place a heavy learning burden on L2 learners of English, especially as they attempt to transfer L1 punctuation knowledge to L2 contexts. Hirvela et al. (2012) emphasize that even when the use of comma appears to be safe and simple, it may pose learnability problems. Truss (2003) further adds, "the full stop is surely the simplest mark to understand so long as everyone continues to have some idea of what a sentence is, which is a condition that can't be guaranteed" (pp. 23). On the other hand, Hirvela et al. (2012) consider the situation more broadly and consider comma functions as grammatical in nature that should be explained within the context of coordinating, conjunctions, and relative clauses. It should be reminded that the ESAP participants of this study possessed a poor repertoire of English grammar initially and a semester of instruction would not suffice to compensate all the language difficulties; perhaps,

another semester is required or some modifications need to be done to invest more time on this "poor stepchild of grammar" (Frank McCourt, 2003, pp. xi).

Conclusions

From the research that has been carried out, it is possible to conclude that transfer of writing outcomes would be enhanced in higher education if specialization in academic writing is embraced in more discipline-specific approaches. For this aim, the current study proposed a multimodal approach toward ESAP courses that was collaboratively designed by ESAP and specialized lecturers. Through the exhaustive team-work of material selection and rigorous instructional planning for multimodal classes, it is evident that this study has addressed several gaps. Firstly, the significance of results in delayed posttest sessions of the two groups showed that the participants succeeded to overcome the "inert knowledge problem" (Whitehead, 1929, pp. v). They activated their learned knowledge and appropriately transferred their learned writing skills to the authentic tasks; second, the presentation of multimodal input provided a combination of written, auditory, and/or visual modes that addressed individual differences and their learning styles more extensively; in this way, the agency of ESAP students was no longer considered passive. Next, this research effectively ensured the relevance of the multimodal discipline-specific presentations and the corresponding writing tasks via a collaborative practice between the English language and specialized lecturers, an approach that is yet to be explored either in the domain of learning transfer or ESAP studies. Generalization of the findings across different contexts should be done cautiously as the researchers could check the effects of the current treatment only in two medical disciplines. Thus, future research is suggested to concentrate on participants from other disciplines on larger populations to check to what extent transfer of academic writing skills would occur in other majors. Finally, future research is suggested to concentrate on students from other disciplines to check whether the act of transfer for different writing

skills will fluctuate or not. Clearly, further investigation will be needed to see how semester length, culture, and social status may determine the final gain of ESAP students in multimodal discipline-specific academic English courses.

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Appendix 1

Questions that were enquired in focus group interviews are outlined below; however, they happened to be reworded according to the given topic of each training session.

1. Have you gone to any other English classes? Do they involve any kind of writing?
2. What are your plans for when you finish your postgraduate studies? Are English writing skills important for these plans?
3. Have your English writing skills improved in this semester? If so, what has improved?
4. Is it important to you\ that you improve your English writing skills in the current program? Why or why not?
5. Do you (or would you) enjoy improving your English writing in the current program? Why or why not?
6. Do you make an effort to improve your English writing skills in the current program? Why or why not?
7. Have you used anything that you have learned or practiced in in the current program in your other courses this semester?
8. Is it important to you that you use things you have learned or practiced in the current program in other courses? Why or why not?
9. Are classmates in your other courses concerned about English writing skills?
10. Do you think using skills that you learn and practice can help you to work faster in other courses?