Adaptivity of Learning Transfer from Theory to Practice: A Case Study of Second Language Writers

Hossein Pourghasemian [1*], Gholam Reza Zarei [2]

[1] *Assistant Professor, English Language Center, Qom University of Technology, Qom, Iran*
[2] *Associate Professor, English Language Center, Isfahan University of Technology, Isfahan, Iran*

Abstract: This case study examined the adaptivity of learning transfer from an English for general academic purposes course to different disciplinary writing contexts. Data were collected at the end of one academic semester from 7 students of engineering disciplines enrolled in the writing course. Their EGAP writing course lasted for 16 weeks over which they were taught *The St. Martin's Handbook, 6th Edition.* The participants' disciplinary writings together with interview transcripts served as the data sources for the extraction of adaptive transfers and also the processes of realizing the transfers. Adaptive transfers were identified by the participants. The findings indicated that learning outcomes can transfer adaptively through a variety of processes to accommodate the new writing demands. The results of the study showed that the participants could adapt their learning along two broad dimensions of transfer, 'idea generation' (IG) and 'text construction' (TC) with the former involving 'explication' and 'integration' of knowledge and the latter achieved at macro and micro levels. Within these adaptive transfers, we found a range of writing issues pursued including 'goals, topics, logics, propositions, integrity, disciplinarity, linearity, paragraphing, and linguistic resources'. Furthermore, the findings displayed two broad categories of 'higher order' and 'lower order' processes employed for the realization of adaptive transfers. While higher-order processes operated through 'transformative and evaluative' mechanisms, the lower-order processes involved two categories of 'avoidance and affordance', with the former as an attempt to refrain from going wrong and the latter as an effort to generate adaptivity. The findings for L2 writing are theoretically discussed.

Keywords: Adaptive Transfer, Disciplinary Writing, Learning Transfer, L2 Writing.

_____
[*] **Corresponding Author.**

Authors' Email Address:
[1] **Hossein Pourghasemian** (Pourghasemian@qut.ac.ir), [2] **Gholam Reza Zarei** (grzarei@cc.iut.ac.ir)

Introduction

Transfer of learning is a central theme in understanding human behavior (Detterman, 1993) and thus a significant concern for scholars in different fields of study, running the gamut from psychology and education to L2 writing (DePalma & Ringer, 2011). L2 writing courses within the frameworks of English for Academic Purposes (EAP), English for General Academic Purposes (EGAP), and English for Specific Academic Purposes (ESAP) have attempted to prepare students for their academic studies by teaching them, say, writing, in one context in the hope of improving their performance in another context (Perkins & Salomon, 1994). Based on this view, students of the writing courses are expected to successfully transfer their learned skills into their disciplinary courses (Wardle, 2007).

L2 writing has turned to the positive role that transfer of learning can play in the students' successful performance in the composing contexts, not just from L1 to L2, as was the case in CR, initiated by Kaplan (1966), but from one L2 context to another L2 setting as well (Leki & Carson, 1994; Currie, 1999; James 2006a, 2006b). Following that shift, some writing courses have been defined within English for Academic Purposes (EAP) to push students forward. A major goal in these courses has been to what extent and in what ways it would be possible to turn EAP writing classes into a useful working model for the learners' transfer of skills into their disciplinary coursework. However, L2 writing researchers have unsurprisingly been divided on the use and usefulness of EAP courses as a platform for the positive transfer of writing skills into the courses across different disciplines. For example, Johns (1997) and James (2009) agree that EAP classes can successfully, though in a constrained manner, enable students to write better in their disciplinary courses. Some others (e.g., Leki & Carson, 1994; Leki, 2007) argue that such classes are varied and diversified in their practices and are hardly of any practical use to the learners for transfer of skills into the field-specific courses. Notwithstanding differences, transfer of learning constitutes an important human characteristic that occurs quite frequently, though not equally, across fields of studies and also with different individuals. This inconsistency arises possibly because transfer as a dynamic issue is likely to be influenced by a multiplicity of conditions and variables which have been ignored one way or another in learning transfer studies (Wardle, 2007).

A considerable bulk of learning transfer studies have ignored the dynamic aspects of learning transfer and its relations with variables such as students' disciplines, context, languages, and even the emotions of instructors and students (Zarei & Rahimi, 2014). In spite of its significant impact, context is among the most disregarded aspects (Wardle, 2007). According to Matsuda (1997), the

old views of learning transfer have diminished the learner to a machine reusing its former knowledge in a static manner. Moreover, Hill, Khoo, and Hsieh (2020) contend that researches on transfer in L2 writing have mostly concentrated on a definition of transfer which is restricted to the reuse and consistent application of past learning. This perspective has to be broadened and reformulated to account for "the adaptation of learned writing knowledge in unfamiliar situations" (DePalma & Ringer, 2011, p. 135), or what is considered as the disciplinary contexts. This reconceptualization of transfer is known as "adaptive transfer" (DePalma & Ringer, 2011, p. 135) and is assumed to bring back into a new perspective of the L2 writers' agency, the dynamism of the writing context, and also social dimensions of writing situations, all being disregarded in the old definition (Grujcic-Alatriste, 2013).

Based on the new perspective of transfer, the present study intends to probe further into how L2 students unfold their adaptive composing behaviors from an EGAP to a distinct disciplinary context. The rationale behind this direction (that is, from EGAP to a disciplinary context) is that adaptive transfer is defined as "a framework that acknowledges the reshaping of prior writing knowledge to fit new contexts" (DePalma & Ringer, 2011, p. 135) and is presumed likely to carry out the promise of a proper condition for the possible realization of such a transfer. Moreover, according to James (2010), a great number of learning transfer studies are based on contrived research-oriented settings. Whereas, the present study employs a real context of learning and attempts to investigate the processes of the students' learning transfer in addition to the types of "adaptive transfer" employed by these students when writing in their related disciplines.

It is hoped that this research drawing on the reformulated view of transfer can shed more light on disciplinary discussions of transfer. Challenging the mainstream traditional views of learning transfer which treat this cognitive activity as reductionist reuse and consistent application of former learning, the present study seeks to find answers to the following questions:

1. What are the types of 'adaptive transfer' (learning transfer) carried from an EGAP to a new disciplinary writing context under a real context of learning?

2. How is 'adaptive transfer' utilized from an EGAP to a new disciplinary context under a real context of learning?

Literature Review

Learning Transfer and Writing

The idea of transfer in the context of writing in L1 and L2 was initiated as early as the seminal

work of Kaplan (1966). That early work of Kaplan led to the development of contrastive rhetoric (CR) which assumed that each language features certain rhetorical patterns emerging from the unique cultural context of that language. Researchers who were grounded in this premise claimed that L2 writers would encounter problems in their composing tasks because of the negative transfer of L1 rhetorical differences (Grabe & Kaplan, 1989; Kang, 2005; Connor, 1996; Kubota, 1998). Therefore, to avoid inter-lingual interferences, CR researchers tried to pinpoint the L1-L2 unique rhetorical patterns in order to help language learners with the positive transfer of their knowledge into the new contexts of writing (Simpson, 2000; Kang, 2005).

Studies on learning transfer have not been limited to L1-L2 settings deeply rooted in contrastive rhetoric (Wardle, 2007). L1 writing contexts have also been investigated for transfer of learning (Petralgia, 1995; Downs & Wardle, 2007). Their common ground is their inconclusive nature and contradictory results (Ho, 2018). Similar to L2 writing, L1 writing contexts have also experienced fluctuations in regard to the significance of transfer of learning. While a few researchers maintain that writing skills are diverse and not capable of transferring from one activity to another (e.g., Russell, 1995), some others suggest that such skills can be adapted to new contexts provided that learners can think rhetorically (e.g., McCarthy, 1987). Smit (2004) views writing ability as either broadly based or localized, with the former tending to occur as transfer across writing contexts but the latter being specific to limited contexts and thus not likely to occur. McCarthy (1987) and Wardle (2007) admit that L1 writing abilities seem to transfer, but they caution that learners need to pay special attention to and assess accurately the contexts that they are going to adapt to. Likewise, Wardle (2007) suggests that learners' meta-awareness about writing can be conducive to their better performance in other disciplines. On the whole, many L1 writing scholars are reluctant to accept the significant role of learning transfer in the improvement of subsequent writing performances (e.g., Petraglia, 1995; Wardle, 2009). As in L2 research, transfer in L1 settings seems to be removed from the requirements and realities of existing contexts. Probably, the researchers are better to discover ways for facilitating the transfer and provide learners with information about how to make use of writing strategies (Downs & Wardle, 2007). To achieve the goal, they need to examine more precisely how learners apply or adapt their knowledge to the new conditions. In fact, such transfer-related studies in L1 writing settings need to reconsider the role of writers and the conditions under which they can transfer their learning from one into another environment.

Learning Transfer in EGAP Writing

L2 writing researchers following the lead of inter-lingual studies of transfer extended it to intra-lingual studies hoping to shed light on the transfer of learning from L2 contexts into L2 contexts (Jwa, 2019; Leki & Carson, 1994) pushing learning transfer studies into English for Academic Purposes (EAP) and EGAP too. As two offshoots of EAP, ESAP (English for Specific Academic Purposes) and EGAP have compounded the challenges associated with learning transfer. EAP presents a continuum of academic purposes, with ESAP forming the discipline-specific and EGAP discipline-general end (Jordan, 1997). While ESAP focuses on the learning outcomes specific to a particular discipline, EGAP takes the view that learning outcomes are applied across disciplines (James, 2010). Thus, ESAP is expected to provide an opportunity for the transfer of learning to almost similar contexts or what has been called near transfer and EGAP across different tasks and contexts or what is referred to as far transfer (Perkins & Salomon, 1994).

Despite this division and ensuing expectations, the studies of EGAP situations have not produced convergent results. James (2010) contends that most of the studies involving EGAP instruction suffer from certain limitations: one is that they have not been directly focused on EGAP but on the academic literacy development, and another one that they deal with the tasks not genuine but contrived for research purposes. Thus, to bridge the gap in the former case, he launched two directed studies and showed that the transfer of learning outcomes (including categories of *organization*, *content*, and *language use*) occurs in the writers' writing (James, 2008, 2009). The latter limitation was addressed in another study (James, 2010) focusing on real contexts of use involving real tasks and disciplines. In this study, he discovered that learning outcomes did transfer from EGAP writing course across task types and disciplines but the frequency of occurrence was different for different learning outcomes, in different tasks and disciplines. Borrowing the design of the study from James (2010), Zarei and Rahimi (2014) conducted a nearly similar study with some differences in the conditions, context, disciplines, and the number of languages involved. They incorporated L2 to L1 transfer in their study because the inter-lingual transfer of learning has for long been a disputable issue, and recently the reverse direction of L2 to L1 transfer has also been considered important (Berman, 1994; Kobayashi & Rinnert, 2008). The results demonstrated that transfer was variably achieved both in self-reports and writing samples, across disciplines, and tasks.

Also, regarding the two languages, the samples written in the English language revealed a higher frequency of transfer use compared with writers' L1 (Persian), signifying that the

instruction language (English) could play a crucial role in the transfer of skills. In addition to the above studies, most of the investigations concerned with the efficacy of EGAP writing have raised questions about the broad applicability of transfer (Johns, 1988; Spack, 1997; Leki, 2003; Currie, 1999; Leki & Carson, 1994). That the results of the studies on L2 writing have been inconclusive may sound plausible as the L2 contexts are subject to a variety of different factors such as students' proficiency level or their language activation threshold in the second language, but, as explained below, the results of the studies on the transfer of learning in the L1 writing settings, due to the complexity of the issue, are no more convincing. Hill et al. (2020) investigated the learning transfer of 25 undergraduate engineering students during an academic year. Employing a mixed-methods approach including interviews and written assignments, they followed the students' learning transfer behavior from an ESAP writing course to subject-specific engineering courses. Their results displayed the transfer of writing-specific learning across disciplines. Their study also underscored the need for the new approach to learning transfer to account for the processes of learning transfer of the students.

Having said that, the difficulties related to transfer of learning especially in the context of L2 writing are far from resolved and thus the scholarship in EAP writing is moving away from the past tradition (DePalma & Ringer, 2011), opening up a new channel for investigation, that is supposed to provide a platform for the current study. This scholarship shifting confirms that the frameworks of traditional studies of learning transfer mostly due to their product-oriented nature have been developed from a narrow viewpoint of transfer that has to be revisited. By considering transfer as simple reuse and consistent application of the learned knowledge in familiar contexts, as DePalma and Ringer (2011) suggest, the frameworks of research remain very limited in their focus. Apart from this narrow definitional scope, Grujicic-Alatriste (2013) also questions the validity of the old view of transfer of learning on the grounds that it dispenses with the important role of the writer in shaping the knowledge, ignores the effects of writing conditions, and rules out the social facets of writing situations. To address the limited scope of old views of learning transfer especially their disregarding of its procedural aspects, the present study is intended to consider the processes which students undertake in carrying their learning from an EGAP to a new disciplinary writing context. To justify the standing of the present study, the need for a new perspective of learning transfer is elaborated below.

Transfer of Learning Revisited

As stated above, researchers have characterized learning transfer too narrowly to explain the way that writing skills can be applied and reshaped in other contexts. The limited concept of transfer as the reuse of knowledge imposes a restriction on the observations that researchers can make of transfer of learning in its complete form of occurrence. In fact, if transfer refers to the consistent application of knowledge from one situation into a new one (Smit, 2004), the concept fails to capture the important forms of transfer that might occur independently (DePalma & Ringer, 2011). Consistent with this position, Wardle (2007) warns that writing instructors must be wary of novel realizations of skills to meet the demands of a new system and should not ignore the ways through which these skills are transformatively carried over across different contexts. In other words, the full-fledged picture of transfer should not only involve the reuse of skills but also encapsulate the moves that students make to adapt their own acquired writing skills to get adjusted to new conditions.

Along this line of thinking and as a criticism of the old view of transfer, Matsuda (1997) argues that transfer as the reuse of learned skills echoes the static theory of L2 writing in which the writer is at best viewed as a machine controlled by some given programs. Matsuda (1997) criticizes researches in CR as having been performed from this perspective. As an important relevant point, DePalma and Ringer (2011) show that the focus on the negative transfer in CR is the result of the assumption that writers functioning in new composing contexts are unable to disentangle themselves from the deep-entrenched rules of L1. Even in the case of positive transfer, the same view of the writer's passivity is manifested in CR discussions. That is, in regard to the positive transfer, the writers also play no active role but they consistently reuse an already learned skill in a new context simply because the acquired skill is exactly similar to the target one and is thus transferred effortlessly. The ignorance of L2 writers' agency is also evidenced in the EAP writing contexts in which an unproductive view of transfer is pursued. As a case in point, Hansen (2000) studied a graduate student of an EAP course and concluded that she was not able to transfer what she had acquired in the course into the new math context. Assuming that transfer from such a course to a totally different context of math was unlikely, she was unwilling to take advantage of the learned skills from the writing course. As discussed before, most studies have viewed transfer as the consistent application of writing skills irrespective of L2 writers being capable of reformulating such acquired knowledge to serve their own special purposes.

In addition to the attenuated role of the writer, transfer viewed restrictively within the static theory of writing also imposes constraints on the roles of the text and readers, just as

prescribed codes and mere decoders of the codes, respectively. Research on transfer done from this viewpoint has been limited to the process of establishing compatibility between the texts studied and target texts produced, and also the conformity between the writers' and readers' expectations. This is also indicative of the restricted perspective of transfer which seeks to establish the stability of contexts, conformity of writer and reader, and also the inherent resemblance of the texts. DePalma and Ringer (2011) cogently argue that EAP courses have always pursued the same goal, trying to see if such classes can prepare learners to function properly in their future *identical* composing contexts. Being critical of transfer in its traditional sense of reuse, Bransford and Schwartz (1999) acknowledge that such perspectives are blunt instruments for measuring small changes in learning. They argue that the focus on certain transfer objectives tends to ignore the important mental processes that learners use to transfer prior learning. In the same vein, Beach (1999) supports a sociocultural notion of transfer, implying that the transfer metaphor should help us understand the continuity and transformation that we experience to become someone new. He presents a construct that places learners and social organizations into a mutual and constitutive relationship over time. In fact, in his opinion, social activities and actors can have a mutual bearing on each other, that is, social activities may be transferred in their original forms into new contexts, but are also very much likely to be used as resources transformed and adapted in new ways through which they can be employed as frames of reference or as patterns of thought on which to rely in the construction of a new premise.

Wenger (1998) also points out that the importation of learning elements from one community into the next is not merely an unchanged and stable reuse phenomenon, but something that is achieved through coordination, translation, and alignments between various elements and parts. Wenger (1998) calls the notion "brokering" and notes that learners not only carry over exact copies of various aspects but also adapt and reproduce their own new behaviors. For him, at the junction of communities of practices "old ideas find new life and new ideas propagate" (Wenger, 1998, pp. 254-255). Again, through the notion of 'brokering', he argues, learners reshape their practices to serve their new purposes.

These distinctions all point to the fact that the notion of transfer has to be expanded to properly capture more of its dimensions. The new and expanded notion of transfer as adaptive transfer in L2 writing is thus a framework that transcends the direct application of the learned skills to involve those that are also reshaped to meet the demands of new rhetorical situations (DePalma & Ringer, 2011).

In fact, adaptive transfer moves away from the narrow conceptualization of transfer as explicated in the writing static theory by presupposing a dynamic model which accepts change and fluidity in the writing skills (Lobato, 2003). The assumed change and fluidity are thought to be individual-specific and affected by a number of factors such as genre, class, and gender defined within a space of interaction between writer and reader (Matsuda, 1997). From this dynamic view of writing, L2 writers are likely to make their own strategic and creative choices to achieve their rhetorical purposes by shifting and adapting their learned writing knowledge in new situations (Canagarajah, 2006). This means that writers have the agency to utilize their acquired resources to produce new ways of knowing, doing, and writing.

Purpose of the Study

Drawing on this body of literature, the re-conceptualized view of transfer, namely adaptive transfer, was adopted as the motivating rationale to study transfer and transfer processes because, to the best of our knowledge, no other study has yet dealt practically with this issue. Moreover, the previous studies have predominantly been conducted from the old perspective of transfer as the reuse of skills, which as Wardle (2007) warns, tend to ignore "the ways in which knowledge and skills are transformed across contexts" (p. 69). Also, this study is prompted by the fact that much of the research on transfer of learning has been limited to analyzing the writers' texts rather than how they achieve the texts and thus the transfer of writing skills. To support this position, DePalma and Ringer (2011) argue that the traditional approaches to transfer focus on merely *what happens* at the end of the tasks and miss out looking into *how knowledge and skills* are transformed to the new target contexts.

To account for the new dimension of transfer of learning in L2 writing context and to make up for the shortcomings of the previous studies on transfer, this research aims to explore the types of learning (i.e., adaptive transfer) carried over, and also addresses how learning (i.e., the process of transfer) is adaptively utilized, from an EGAP into a new disciplinary writing context.

Method

Participants

This study was launched in 2013-2014 at Education Center, Isfahan University of Technology, Iran, and involved 7 students who voluntarily participated in a financially self-supported EGAP writing class. The course was entitled 'English Language Writing' as an extracurricular one to be taken only by volunteers. The participants wished to develop their writing skill in the English language both to pursue their studies abroad and also to report their field projects in

English to their supervisors. The students of the class were majoring in different fields of study including Industrial Engineering, Chemical Engineering, Electrical Engineering, and Computer Engineering. Their English language proficiency was estimated to be appropriate for the present class as they had already achieved over 80 percent on the English test of the nationwide university entrance exam. Their age ranged from 19 to 23 years, 4 were females and 3 males, and all were native speakers of Persian. The participants met the requirements of being participants of a case study due to their limited number and the fact that one trait belonging to them was studied thoroughly.

Design

In contrast to most EGAP writing studies that have been conducted in the research-oriented contexts rather than natural ones (James, 2010), the present study relied on a qualitative design in a real context of learning in order to scrutinize learning transfer as a natural phenomenon. The design consisted of the writing instruction and the participants' writing performance (transfer of learning) as part of their out-of-class activity or what is referred to as their own disciplinary activity.

As 'transfer' does not occur immediately and requires time and opportunity to achieve (Haskell, 2001, James, 2010), the researchers waited for the end of the semester to collect the writing samples. The students were supposed to prepare their project reports in English for their own professors to hand in a copy of their writing to the researchers for the intended study. The rationale for the selection of the out-of-class writing samples, as pointed out before, was to investigate the EGAP into disciplinary transfer that could serve the purpose of the present study.

To be different from previous studies, this research focused especially on how adaptive transfer is realized in students' writing as elicited from participants' interviews, and not just on what does or does not happen (DePalma & Ringer, 2011). Actually, the data collected from the writing samples and interviews provided the basis for the analysis of the types of adaptive transfer, and processes through which the students reported to have achieved transfer from an EGAP into disciplinary context.

Materials
The Book

The textbook used for this study was *The St. Martin's Handbook, 6th Edition* (Lunsford, 2010). This book involves a number of different activities which altogether can help learners practically improve their writing ability. The book, as the author makes clear, intends to help students have appropriate grammatical and rhetorical choices. Also, it presents some general writing topics such as exploring, planning, and drafting the topic, revising, visual thinking, critical thinking, constructing arguments, documentation, hypotheses and thesis statements, writing styles (APA, MLA, etc.), effective language use, punctuations, sentence grammar/style/clarity, paragraph development, mechanics, and finally academic and professional writing. The reason behind using this book was that various learning elements such as describing a subject visually, stating personal significance, arguing, etc. are clearly targeted (see Appendix A for further details). The researchers believed that the book could create a proper condition to focus on how learning elements are transferred or *adaptively* reformulated into the new composing contexts. Adaptive transfer is considered as the learners' attempts to fittingly apply the learning elements from one context to a new context of use so as to accommodate the requirements of the novel situation.

Writing Samples

A total of 21 samples written at the end of the semester were collected from participants' EGAP class and also disciplinary contexts (students' university projects rather than the samples of the class). Of the 21 samples, 7 were from students' fields of studies (disciplinary writing). In total, the analysis in this study included 7 samples written by students to complete their projects conducted outside the university, generally in industrial zones. In fact, these students had to write an extended summary of their projects in English. The writing samples, namely the extended summaries of the students' projects in English, varied in content, length, organization, and format, with 4 being 2 pages each, and 3 more (max 3 pages).

Table 1. *Participants' Disciplinary Writing Samples*

Participants	Fields of Study	Topics of disciplinary samples	Word Count
1	Chemical Eng.	S & Q Refinery	733
2	Electrical Eng.	Induction Machines	597
3	Electrical Eng.	Electrical Boards	685

4	Electrical Eng.	Communications Switch Systems	767
5	Computer Eng.	Computer Hardware	721
6	Industrial Eng.	Modelling Analysis	699
7	Industrial Eng.	Casting & Welding	658

Total samples: 7; Total words: 4860; Average words per text:694.28

Note: S & Q=Sorkhun & Qeshm (*proper names*)

Procedures

Instruction

The writing class was taught by one of the researchers with over ten years of experience in teaching writing courses at both undergraduate and graduate levels. Each session involved reviewing and enhancing the book contents. Also, the participants were required to individually compose, collaboratively revise, and proofread their own drafts on different topics. The sessions were mainly held in the English language with rare switches to L1 (Persian), only wherever a breakdown in the conveyance of the message was likely. In addition, the learners enjoyed the teacher's active collaboration with reviewing and revising to finalize their drafts. The main task in the study consisted of the writings of the students as their activity in the EGAP class and also the summaries of the drafts which the students had to deliver to their supervisors in their related disciplines.

The instruction lasted for the whole semester (16 weeks). And the writing samples were those written at the end of the writing course because, as Haskell (2001) asserts, learning transfer cannot happen immediately after instruction, but it needs some time to be properly achieved. The book served as the treatment because the instruction of the book and the content of it were expected to make the changes in their learning condition. The analysis of the students' writings in the class and also the summaries of their drafts which were to be delivered to their supervisors in the detection of 'adaptive transfer' can be considered as the testing of this study.

Data Collection

The data for this investigation came from the participants' collaboration for the transfer identification in their writing samples and the interviews about the types and processes of transfer they relied on to make adapted use of the learned skills from the EGAP class. To collect the data, first students' writing samples as EGAP and also those written as summaries of projects of their own fields of studies were collected. The latter samples (extended summaries

of the projects) were used in this study, which were received nearly within 3 months after the course completion. The characteristics of the data including fields of study, topics, word counts for each piece of writing, and total word counts are provided in Table 1 presented in the writing samples of the material section. The choice of the participants for this study was based on availability sampling because they had enrolled for the EGAP writing course. One of the researchers was the instructor of the course and in the process of interviews and analysis of the data, the two researchers cooperated. The researchers collected the writing samples at the end of the term because 'transfer' takes time to occur (James, 2010).

Data Analysis

Upon the collection of samples at the end of the course, the identification of transfers in the disciplinary samples started through a retrospective collaboration between the researchers and students. At first, transfers were identified and coded as 'T' (Transfer) for further analysis. In this identification process, both researchers examined the samples simultaneously and resolved their differences to attain one hundred percent agreement. The initial identification step took about 8 hours, equal to a complete working day for all seven papers. Ten days later, arrangement for further analysis was made, and students were called over for the discrimination of the identified transfers as adaptive or non-adaptive. Transfers differentiated as indirect or adaptive were coded as 'A' (adaptive transfer); non-adaptive ones or direct transfers were thus excluded. In total, there were 147 transfers, of which 61 were distinguished as adaptive, and the remaining 86 were non-adaptive.

A week later, students were interviewed for identifying the types of adaptive transfers. Bringing transfers already identified to the participants' attention in each writing sample, the researchers prompted them to retrospectively explain with which particular learning element of the course (EGAP) the identified transfers were possibly associated. This part of the interview was intended to identify and categorize the types of transfer. Later (about ten days), they were asked how they had transferred or reformulated their previous learning into the new and adaptive context (process). As reiterated before, this latter step was supposed to provide an insight into the *processes* involved in the reformulation of learning, considered essential in the study of adaptive transfers. The participants' explanations on the above two issues were audio-recorded for later transcription and synthesis which were based on the entire data set produced by the participants. It is worth saying that the interviews were all conducted in

Persian, participants' L1, which lasted on average about 24 minutes each, totaling 168 minutes for the total samples (N=7).

The interview transcripts were checked for the initial analytic categories among the identified adaptive transfers and then developed into a coherent pattern to be applied to all the data. Through a reiterative reading of the findings above, maximally similar transfers, through connections generated both within and across categories, were blended into self-contained categories. Likewise, the processes of adaptive transfers were synthesized and compressed into thematic units, using techniques for the qualitative analysis of data (Strauss, 1987; Silverstein & Auerbach, 2003). Then, the subcategories of each self-contained category (both types and processes) were counted and considered as their frequencies.

In order to check the consistency of the procedure, the researchers repeated the analysis of 57 percent of the samples about a month later, which showed an agreement index of about 97 percent.

Below is described how the analysis proceeded.

To begin the analysis, the researchers first required the participant to think of any possible relationship their writing had with the course to identify transfers in a general sense. If the relationship with the textbook was finally identified as indirect, the parts were coded as adaptive transfer (designated as A). After all the transfers were identified, they were cross-checked for similarities and differences. As can be seen in the results, they were further distinguished to belong to the two mutually exclusive categories of 'idea generation and text construction' (respectively coded as 'AI' or AT' meaning Adaptive Idea and Adaptive Text). Since the two broad categories could reveal more distinct patterns, 'AI' was found to subsume two subcategories of 'explicating' and 'integrating' knowledge. Similarly, 'AT' was divided into two categories of 'macro and micro' levels. Overall, the following coding system was developed in the study to represent the findings and extract the patterns:

Table 2. *Coding Scheme Developed for Analysis of Types of Adaptive Transfers*

Types of Transfer	
Idea generation	Text construction
A=adaptive transfer	A=adaptive transfer
I=Idea generation	T=text construction

E=explicating knowledge	M=macro level
In=integrating knowledge	Mi=microlevel
G=goals	Int=integrity
To=topic	D=disciplinary discourse
L=logic	Dp=draft preparation
P=proposition	Pa=paragraphing
	Li=linguistic resources

Below is an example of how transfers were extracted. The following excerpt is the first paragraph of a participant's writing.

(Excerpt from participant 3, Major: Electrical engineering; Report on Training in Electrical boards)

Title: Industrial Electrical Boards

Power is an industry that makes one big market in the world, though not the biggest one. The biggest market in power industry belongs to the manufacturing of the boards in the world, especially, the electrical switchboards. This has made a big market because almost all factories, offices, big buildings, etc. rely on this industry.

The analysis of transfer typology came from the following interview (rough translations from Persian, with redundancies removed):

Interviewer: Do you think anything you have used in your writing (above paragraph) is related to the course?

Participant: Yes, when I wanted to write, I thought about writing well, and in an organized way[1], such that the reader could conveniently follow me[2].

Interviewer: Referring to your sentence '.....writing well, and .....' could you tell me if you had a particular point from the book in mind to rely on?

Participant: Well, I think not a special point or page but generally I remember this point (i.e., writing well....) repeated in the book.

Interviewer: What about the second part, I mean, 'such that. ..'

Participant: Again, the course always asked us to bear reader in mind and write for somebody else. Though I cannot show you the exact place in the book.

Based on the interview transcript, the first underlined sentence above was identified as 'adaptive transfer' since the participant rejected the direct use of that learning element; that part was further found to be about 'text'. Fine-grained analysis showed it to be about

coherence/cohesion within a paragraph, at a 'macro-level'. Thus, the whole part was coded as (ATMPa):

Analysis of sentence 1=ATMPa (adaptive, text, macro level, and Paragraphing)

The second part (*such that* ....), as underlined above in the transcript, was similarly analyzed and given the following tag (AIEG):

Analysis of sentence 2=AIEG (adaptive, idea, explicating, and goal)

Through the analysis, the second part was coded as adaptive, used to express *content* (thus idea generation), primarily intended to *make* the content *understood* (hence explicating), and finally concerned with the *purpose* of writing (goal).

Upon the completion of transfer extraction in the manner explained above, the next step focused on how the participants managed to reformulate the identified transfers into the new uses (processes of transfer). In view of the space constraint, only the second part (*i.e., such that* .....) above is exemplified below.

The analysis of processes for the above transfers was based on the following transcript.

Interviewer: Referring to this sentence '... the reader can conveniently follow me', could you explain how you came up with this, based on your writing course?

Interviewee: Well, I was first thinking about how to make a pathway for writing this; I realized the way you write or you talk has a lot to do with the addressee; this brings you orderliness.

Interviewer: Then, did you reflectively stop to structure your thought?

Interviewee: Oh, yes, I had this in mind that the reader of my writing is supposed to be my supervisor at university, if not other outsiders. Having this plan formed in my mind, I tried to change the knowledge already acquired into a useful, practical purpose, thus writing for somebody. So, the reader goal as a part of the course could here be practically reused for the configuration of my writing.

As can be seen, this participant goes through several stages for using the received knowledge of the writing course. At first, s/he thinks about the *pathway* and then the relationship with the *addressee*, which later continues with the *mind* for the framing of writing. Altogether the process can be identified as attempts directed toward formulating a pattern in the mind so as to deal with the issue, hence the process is designated as '*mental modeling'*.

Other processes were similarly detected and identified and finally the following coding scheme was developed to differentiate the processes as 'higher order' and 'lower order' with some more subservient components.

Table 3. *Coding Scheme Developed for Analysis of Processes of Transfer*

Processes of Transfer	
Higher order	Lower order
H=higher order	
T=transformative	L=lower order
M=mental model	Av=avoidance
An=analogizing	Avf=avoiding fragmentation
Al=algorithmizing	Af=affordance
Ev=evaluative	Ass=assessing alternatives
De=deconstructing	Com=compensating for L2
Mo=monitoring	Sim=simplifying/rewriting
Pe=personalizing	

The data collection leading to the last part of data analysis (step 1 to step 3 below) is diagrammatically shown in Table 4. This study reports on the data obtained through the following stages.

Table 4. *Data Analysis in the Study*

1. *Transfer* Identification Interview

Disciplinary samples were examined for transfers: Major question: Is your writing on the whole (then sentence by sentence read out to the writer) related in any way to your EGAP course? If yes, it was

jotted down or the part underlined as transfer. Decisions were made later on the status of transfers as being adaptive or non-adaptive transfers.

---

2. Adaptive Transfer *Type&Process* Identification Interview

Interviews were conducted on type/process identification: Students were prompted to explain in *what* way each transfer was related to their course and *how* they modified the learned knowledge into the new use: Major interview questions: 1. Which course-based element/skill do you think you have utilized in here? 2. How did you change that skill/knowledge into this use?

3. Data Synthesis

Interviews were transcribed, cross-checked for similarities/differences, and converted into independent categories of transfer types and processes via a data-driven procedure; subcategories making up each independent category were counted as the frequency of the category; 57% (4 samples) were checked again for consistency.

All the processes of codification, analysis, and identification were done simultaneously by both researchers who resolved their differences to attain one-hundred percent agreement on the issues. For the interviews, both authors decided on each question to be asked and came to unanimous decisions. Then, one of the researchers read the question. Finally, we translated the audio file of the interviews together and came up with the final translated report.

Results

The present study drew on the conviction that L2 writers are capable of intelligently employing their previously-learned knowledge from an EGAP context to shape their composing behaviors across unfamiliar contexts, or what has come to be identified as adaptive transfer. Further, it was hypothesized that for adaptive transfers L2 writers had to undergo adaptive processing to work out a solution for the case in question.

With those points in mind, the study investigated the types and processes of adapting previously garnered skills into the new context of writing.

Types of Adaptive Transfer

The first inquiry, as stated before, concerned the typologies of transfers that writers would use to carry over their learning to new composing tasks. Types of adaptive transfers presented below are thus categorization of attempts the study participants have made to indirectly reapply their course-based learning.

Analysis of the data led to the generation of two broad categories of adaptive transfers, namely, 'idea generation (IG)' and 'text construction (TC)'. The two categories also encompassed some more subcategories (See Table 5) that are listed and described along with some examples from interview transcripts to illustrate.

IG Transfers

This type of transfer refers to the participants' focus on the content of their learning which is also known as the world knowledge. That is, writers in this study argued that they could resort to their instructional resources in order to accommodate the composing challenges in the new contexts. This general category has been built upon concrete interview transcripts which were first arranged into initial analytical themes and further into two categories of "explicating and integrating" knowledge.

-**Explicating Knowledge**: as a subcategory of 'IG' knowledge, this type of transfer referred to the participants' involvement in the unfolding of the meaning, or making the implicit explicit. As two subcomponents of this category, 'goal analysis' and 'topic analysis' are the knowledge-based efforts to unravel the goals or topical dimensions of writing that needed to be tackled (See Table 5 for details). 'Goal analysis' and 'topic analysis' both referred to the students' description of what they were supposed to write for and about, respectively. Indeed, they unfolded their acquired knowledge about writing in an attempt to be in line with the purposes they had in their minds and also the facets of the subject in question. The following example (goal analysis) shows that the participant had to consider the reader for whom the writing was intended.

Example (Participant 5, Major: Computer Engineering): 'I tried to look into my writing from eyes of the readers, so I had to reshuffle my knowledge related to this issue.'

This description was identified as 'explicating knowledge' since the writer tries to utilize his course-based skill to explicitly set a goal towards the reader's ability in reading.

-**Integrating Knowledge**: this subcomponent stands in contrast with the above one indicating that this type of knowledge-based transfer brings together possible relationships of the parts/propositions to form a common representation. As can be seen in the table, it focuses

on two types of synthesizing skills, 'logic and proposition'. Both subcategories of 'logic and proposition' were related to the participants' arguments for the establishment of cause and effect and effective content focus, respectively. The following example shows the participant's description of how he developed his composing task.

Example (Participant 2, Major: Electrical Engineering): "For speed control by induction machines, I was supposed to assemble a special causality lines in my writing ....."

In this transcript, the writer shows that the knowledge already acquired had to be merged with the content of writing for the fulfillment of the *logic*, thus known as integrative knowledge.

TC Transfers

This category, as the second type of adaptive transfers, point to the reapplication of the participants' skills in view of the language and language properties. In other words, it can be argued that writers also relied on their acquired knowledge for the creation of a semiotic world of language itself. This use of knowledge gives rise to a linguistic universe parallel to the conceptual world, which coordinately realizes what we come to know as the text. The findings in this part have featured two categories of 'macro' and micro' with some substantiating corollaries as discussed below.

-**Macro Level**: associated with the organization of the text, macro-level transfers were all semantic objects of abstract and higher levels that writers drew upon to make the text-internal relations clear. Such structural issues were identified as macro level since they encompassed a variety of self-reported skills all adaptively intended to serve the global organization of writing in the non EGAP context. Transfer of this global feature of language has been accorded importance throughout the students' compositions via some subsidiary components, as seen in the table, to establish the property of coherence. These subcomponents include 'integrity, discipliniarity, linearity, and finally, paragraphing.' They respectively refer to the participants' transcripts dealing with the unification of ideas, discipline-orientedness, seriating of important points, and arranging the writing into paragraphs. Below is an example for 'integrity'.

Example (Participant 7, Major: Industrial Engineering): "I finalized my summary by focusing on the connectivity across the major points from the beginning to the end.'

The example clearly indicates that the summary of the project written in English is finally retouched by this participant for the assurance of the internal links.

-**Micro-Level**: transfers of this kind, unlike the above one, were those reformulated learning elements from the writing course which students utilized to get rid of the local level deviancies of majorly linguistic nature, related to vocabulary choice, spelling, verb-tense-voice check, subject-verb agreement, modifiers, parallelism, and punctuation. In fact, this category of transfer involved the participants' focus on the linguistic elements used to improve the quality of their writing. Here is an example of linguistic correction from one of the participants.

Example (Participant 5, Major: Computer Engineering): '....I revised the whole writing and ……. replaced my inappropriate vocabulary items and also incorrect spellings.'

Table 5. *Types of Adaptive Transfers*

Major categories	Minor categories	Transcript based categories	Transcript based evidential
I. IG (23)	A. Explicating knowledge (13)	1. Goal analysis (5)	'I tried to look into the writing from eyes of the readers, so I had to reshuffle my knowledge related to this issue.'
		2. Topic analysis (8)	'I knew we had to mull over the facets of the message (computer drives) first to ….'
	B. Integrating knowledge (10)	3. Logic synthesis (4)	'For speed control by induction machines, I was supposed to assemble a special causality line …..'
		4. Proposition focus (6)	'This was about the cooling tower in the refinery that I thought needed correct presentation and documentation of content.'
II. TC (38)	A. Macro level (16)	1. Integrity (3)	1. 'I finalized my summary by focusing on the connectivity across the major points from the beginning to the end.'
		2. Disciplinary discourse (2)	'In fact, I needed to write in my own field, supposed to ….'
		3. linearizing (5)	'This point was about 'on-hook' and 'off-hook' that had to be put in proper order and explained more ….'
		4.Paragraphing (6)	'In this part I was careful to first write on metals, then welding and then painting of boards in separate paragraphs because …..'
	B. Micro level (22)	1. Linguistic resource use*(22)	'As an important point of writing for me, I revised the whole writing and corrected and replaced my vocabulary items and also spelling.'

Notes: IG=Idea Generation; TC=Text Construction; numbers in parentheses indicate frequency of occurrence
*Linguistic resources included: vocabulary (5); Spelling (3); verb-tense (3); sub-verb agreement (6); modifiers (2); parallelism (2); punctuation (1)

Processes of Adaptive Transfer

This part of the study addresses the participants' explanations of *how* they reformulated their previous learning into the non EGAP contexts. Thus, the following are the analysis and categorization of the interview transcripts obtained from the second part in the data collection procedure. Consistent with the way types of transfers were identified, processes were also first compiled into initial categories based on the evidence from the data and subsequently compressed and merged into more general themes. The processes were categorized as below:

Higher-order Processes

This process was identified as such in pursuit of the way that the participants worked out the issue of adaptive transfer. In fact, students relied on cognitive/mental involvement in critically changing their learned experiences and making up new abstract principles for handling their composing tasks. Thus, the process of 'higher order' was concluded from two categories of 'transformative' and 'evaluative', both of which also subsumed few other subcomponents to be discussed below.

-**Transformative**: as a category leading to the 'higher order' process, 'transformative' involved the participants' actions to convert their previous learning to fit the new context. This category resulted from a few subparts including 'visualizing, analogizing, algorithmizing, and personalizing.' The last one (personalizing) is exemplified below.

Example (Participant 6, Major: Industrial Engineering):'... sometimes I changed others' words to show them as if from my own mouth to ....'

In the above example, the writer admits having changed the words of other writers or authors, possibly to avoid plagiarism, and thus made them his own as one way to achieve the transfer of learning.

-**Evaluative**: this category was based on the findings showing participants' attempts to assess their learning experiences for the modification of their composing actions. In fact, in this process, the participants talked about their inquisitiveness into the appropriacy of what they were inclined to insert into their writing. This category was obtained through two identified processes of 'revising and monitoring.' Here is an example for 'revising'.

Example (Participant5, Major: Computer Engineering): 'In this case, I had to look back at the points on computer fans one by one, <u>rearranging them to become readable.'</u>

The participant, as seen above, shows that revisiting what has already been written is necessary to enhance the readability of the text.

Lower-order Processes

In contrast to the above category, this process was labeled 'lower order', since our participants were found engaged with some ordinary and factual procedures of tackling cognitively less demanding problems of re-applying their acquired knowledge. According to the data analyzed, this process refers to the way the writers tried to take advantage of factual resources in two ways; one to avoid the flawed or ineffective use of resources referred to as avoidance, and another to make proper use of such resources called affordance.

-**Avoidance**: This category was based on the fact that participants of the study resorted to their potential to get rid of the problems which could end up in linguistic errors. An example of this category relates to fragmentation avoidance.

Example (Participant 3, Major: Electrical Engineering): '...I was careful not to write fragmented descriptions.'

This short communication was about a participant's engagement with the relationship within sentences and beyond to show that the compositions have to meet the criterion of cohesion.

-**Affordance**: Unlike the above category, this one was based on the participants' assertions that they took advantage of their course-based instruction to improve their compositions. In fact, they utilized their knowledge of linguistic resources to 'employ alternatives, compensate for lexical deficiencies, and simplify or rewrite.' Below is an example for 'rewriting'.

Example (Participant 4, Major: Electrical Engineering):'This part I had to actually rewrite because it was not quite meaningful.'

Table 6. . *Processes of Adaptive Transfer*

Major categories	Minor categories	Transcript based categories	Transcript based evidentials
I. Higher order (28)	A. Transformative (16)	1. Forming mental models (visualizing; generating concepts) (6)	'Having the plan formed in my mind, I tried to ….'
		2. Analogizing (4)	'This helped me think that UPFC is similar to our brain controlling…, thus I had to write more on the parameters affecting the power flow in the transmission line.'
		3. Algorithmizing (2)	'I had developed a quick solution formula to write first in broad ways and then increasingly less and less ….'
		4. Personalizing (4)	'Like this, sometimes I changed others' words to show them as if from my own mouth to ….'
	B. Evaluative (12)	1. Revising (4)	'In this case, I had to look back at the points on computer fans one by one, <u>rearranging them to become readable.</u>'
		2. Monitoring (8)	'From my course I learned to keep my eyes on all these from the beginning to the end of ….'
II. Lower order (44)	A. Avoidance (9)	1.Avoiding fragmentation (9)	'Based on my knowledge, I was careful not to write fragmented descriptions.'
	B. Affordance (36)	1. Assessing & employing alternatives (syntax) (10)	'I had to see how I could express best the issue of 'macroscopic texture', so I replaced the sentence structure …..'
		2. Compensating for L2 lexical deficiency (7)	'Often, my L2 knowledge was not reliable, and I had to for example *here* look for better options which ….'
		3. Simplifying/ Rewriting (19)	'This part I had to actually rewrite because it was not quite meaningful.'

Note: Numbers in parentheses indicate the frequency of occurrence

AREL

Another line of investigation concerned the relations between types of transfer and processes as the processes were derived through re-inspection of how the transfer types had been achieved. Though the processes could have been directly associated with every single type of transfer, they were found more illuminating if categorized separately, as we did in the above separate tables, because there could not be detected linear relations among processes to produce one-on-one thematic correspondences. This means that the same transfer type discovered could be realized through different processes ranging qualitatively from lower to higher processing categories. Another point related to the processes is that the interview-based transcripts of processes sometimes had within them more than one process utilized. Thus the researchers felt compelled to keep types and processes of transfer distinct for the analysis to be more precise.

For example, in the following case, while the first underlined sentence (1) is a process of 'evaluative' type, the second underlined part (2), talking about *rearrangement*, can be best fitted into the 'transformative' category.

(Example from Participant: 5, Major: Computer Engineering)

'In this case, <u>I had to look back at the points on computer fans one by one (1)</u>, <u>rearranging them to become readable</u> (2).'

The multiple dimensions of transcripts resulted in the multiple interpretations of the transcript-based processes, thus giving rise to more processes in number than types of transfers.

To clarify the relationship, however, between them, the researchers tried to show how the two broad categories of transfers (IG vs. TC) are realized through the categories of processes. The following figure, drawing on the frequencies of processes used, depicts this relationship. As can be observed, both types of transfers have been materialized through both broad groups of processes (Higher order vs. Lower order) and also the subcategories.
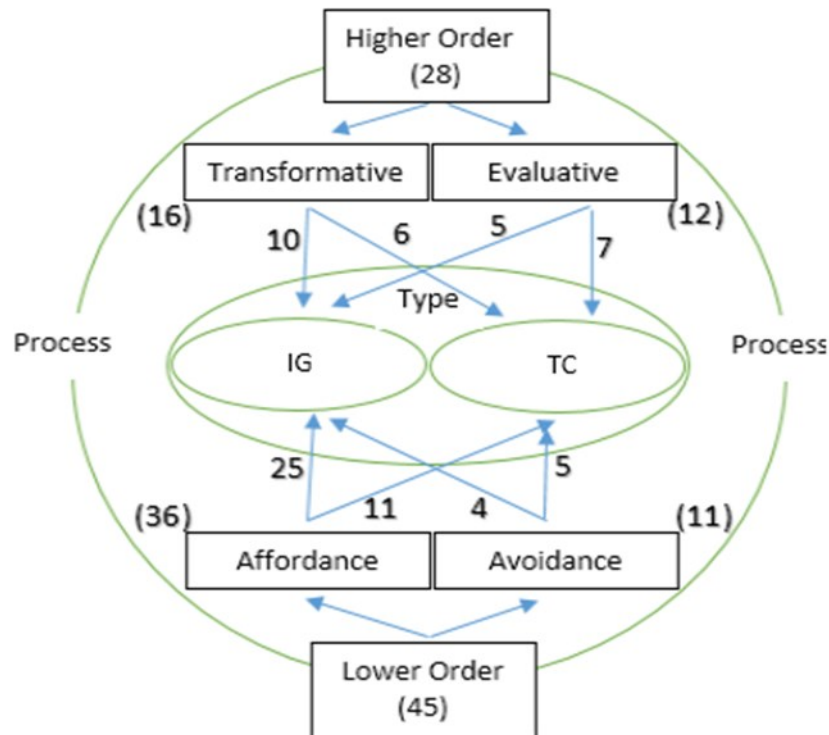
Figure 1. *Relationship between Types and Processes of Transfer*

As the first point to note, it is of little surprise, given the students' low writing expertise, that lower-order processes (*f*=45) have been at work nearly two times more than the higher-order ones (*f*=28), with the two subcategories of 'affordance' and 'avoidance' respectively having been used 36 and 9 times to realize IG and TC transfers. Further, it is revealed that higher-order processes, including 'transformative and evaluative' account for the IG and TC transfers with the frequency rates of 16 and 12, respectively. Stated otherwise, IG transfers rely on more transfers of, first, 'affordance' from lower-order processes and, second, 'transformative' from higher-order processes to realize while 'TC transfers' fall on lower-order process of 'affordance' first and then higher-order process of 'evaluative' for realization.

One explanation why for the realization of both types of transfers, lower-order process of affordance ranks first could be the students' inclination towards the active involvement in the production rather than in the evasion to achieve the goals. That is, the participants' skills had to emerge in one form or another of being productive rather than in the direction of avoidance that would finally end up in no production.

The pathways for the types of transfers realized through processes can be summarized as follows:

Table 7. *Pathways for Processes to Realize Transfers*

Transfers	Processes used to materialize transfers		
	Lower	Higher	Overall (Lower+Higher)
IG	affordance>avoidance	Transformative>evaluative	lower affordance>higher transformative>higher evaluative>lower avoidance
TC	Affordance>avoidance	Evaluative>transformative	lower affordance>higher evaluative>higher transformative>lower avoidance
IG +TC	Lower affordance>higher transformative>higher evaluative>lower avoidance		

Discussions and Conclusion

Transfer in L2 writing is an important issue since students have immediate needs of composing in a variety of contexts not necessarily similar to what they learn from. Transfer of learning is a dynamic and complex phenomenon (Haskel, 2001; Ho, 2018) that requires learners to move into a new situation taking advantage of knowledge gained from previous experiences and studies either in a direct way or in an indirect and transformed manner that has come to be identified as the adaptive transfer. Since few studies have dealt with the transfer of learning in general (Wardle, 2007) and adaptive transfers in particular (Grujicic-Alatriste, 2013), the present research investigated how adaptive transfer unfolds in the real context of writing for disciplinary purposes to fill the existing gap and also to elaborate on the scholarship.

The results of the study revealed that learners of English as L2 are capable of transferring their acquired knowledge in a rather unconstrained way in the sense that they can marshal the resources available to dynamically and creatively achieve a wide spectrum of new objectives. This is evidenced in the number of adaptive transfers (N=61) in relation to the number of transfers of reuse (N=86) detected in the writings, which, unlike James' (2009) finding that students are constrained by the differences between tasks, shows that adaptive transfers are quite prevalent in the situations where students are not to write across equal conditions. As shown in the results, L2 writers have been able to work out the problems of knowledge transfer across two broad domains of 'idea generation' and 'text construction'. Subsumed under the two categories, there can be found a number of subsidiary attempts of adaptivity nature (e.g.,

goal analysis, logic synthesis, use of linguistic resources, etc.) which all point to the importance of the writers' competence developed to transcend the assumed limits of learning. In other words, writers required to perform in a different context of composing could agentively re-conceptualize their acquired knowledge forms to satisfy the exigencies of a new activity. Known as adaptive transfer, this new metaphor is thus demonstrated in this study not to be a mere terministic screen (Burke, 1966) which determines the consistent moves of writers towards contexts of identical features (such as the reuse of linguistic resources), but rather as a transformative screen that provides transitioning of writers into ever-shifting roles of both utilizing their prior experiences directly and reconfiguring them across contexts and places. The findings demonstrate that the writers learn to transformatively, at one level of expertise, *explicate* and, at another level, *integrate* the available knowledge for the generation of fresh conceptual positions (Table 5).

As further evidence for this unrestrictive transference of learning, the processes of transfer also revealed the students' functioning along two broad dimensions of higher-order (transformation and evaluation) and lower-order (avoidance and affordance) cognitive skills bringing to the fore their exhaustive attempts for the realization of their potential to achieve their composing goals. This is well documented in Table 6, where a wide range of cognitive weaponry from visualizing, algorithmizing, personalizing, revising, monitoring, avoiding, assessing, simplifying to compensating for deficiencies are shown to have been strategically invoked for working out the problems students face.

As such, the findings of this study largely conform to the previously undertaken studies that have argued transfer is a complicated and dynamic phenomenon (Carrol, 2002; Wardle, 2007; Lobato, 2003; Jwa, 2019; Parks, 2001), transfer is cross-contextual (Lobato, 2003; Pierce, Duncan, Gholson, Ray & Kamhi, 1993), transfer is rhetorical (Canagarajah, 2006), and transfer is transformative (Matsuda, 2002; Horner & Lu, 2007; Canagarajah, 2006).

In parallel to the above descriptions all pointing to the transcendent nature of transfer, the results of this research, break away from the studies that have come up with the unilateral views of static, near, localized based (narrow), literal, and specific transfers (Haskel, 1998, 2001) versus dynamic, far, broad-based, lateral, and non-specific transfers, respectively. In fact, this study dealt with intelligent regeneration of the acquired knowledge in a new context and showed that writers are capable of going beyond discrete duality, as targeted in the previous studies, into the continuity of experiences (Beach, 1999). A very interesting evidence of 'continuity of experience' was observed in the process we have referred to as 'algorithmizing'.

This term used to express the writers' processing ability was extracted through the hints that the student of computer engineering made about his ability to make use of his learning- apparently alluding to the computer algorithm writing and programing. From this, we realized that students are not only able to develop their own global technical skills from one field of study but also integrate their past and present experiences to come up with formulations which are basically novel.

Therefore, to show that L2 writers are not delivery people to merely transport skills, the types of transfers (IG vs. TC) found in this study were labelled differently from the transfer history because we figured out that learning transfers cannot and should not be conceptually limited to the static bifurcation of the past as such a division inadvertently abandons the generative capacity of learners. This is to argue that characterization of transfer as far, broad, lateral, or non-specific simply refers to the inter-text and inter-context relationships and not to the human abilities at work to account for dynamic features of transfer or what is called the actor-oriented transfer (Lobato, 2003).

Also, in this new perspective, a trajectory of abilities that can be deployed and maintained through processes of varied nature regardless of whether the texts are far, near, specific, nonspecific, broad, or narrow, as shown in Figure 1, can push the notion of transfer to be constituted beyond the limits of the text assumed as a "schematic code prescribed by the writer's background" (Matsuda, 1997, p. 245) and beyond the restricted view of task and context stability.

Another particular point that the results have bearing on is that transfers are very fluid and dynamic. Unlike Smit's (2004) differentiation of broad transfers as those occurring from one context to a different one and localized transfers as specific to identical contexts, the interview transcripts revealed that transfers can move flexibly along the general–specific dimension with both types of transfers functioning the dual role, that is, the specific could be carried into a general and a general transferred into a specific context. Further, the blended role of higher and lower-order processes in the realization of transfers bears testimony to the fluidity of the knowledge resources. In this direction and as important evidence for the writers' agency, the use of temporal transitions as *specific* issues induced the writers to take care of the *general* issue of 'integrity of the text' and in reverse, the general issue of 'paragraphing' was used as a supportive logic to deal with the specific notion of 'intra-sentential linearity'. Here is an example:

Participant 1: '...as I knew about the linking role of 'at first or finally', I thought this point could also hold true about the consistency across my writing'. (Example of specific to general transfer)

Participant 7: 'to correct my sentences, especially the proper placement of verbs and adverbs or series of adjectives I was inspired by the paragraphing information to revisit them one by one'. (Example of general to specific transfer)

This shows that writers are, in the course of learning about writing, developed into strategic composers (Carrol, 2002) who can dynamically assess and reassess their composing and rhetorical capacity to function properly regardless of whether their acquired knowledge has been broad based or localized.

Closely linked with the above thinking, this study contributes to understanding the mental processes that could otherwise have been missed out. The results of the study have shown that writers capitalize on their own mental ability to tackle the problems of transfer and learning without being reliant merely on the text and context-defined features. This characteristic of writers which is realized as "transformation in becoming someone new" (Beach, 1999, p. 102) is also represented through the sociocultural view of transfer defined as "consequential transition among social activities" (Beach, 1999, p. 104) to show that writers and activities are in a mutually constitutive relationship to each other. To elaborate, though some degree of resemblance between the domain or task or context may induce processes of learning to come into play, this does not mean that domains, tasks, and contexts are to be entirely symmetric for the transfer to take place without any role for writers to play. While the complete symmetricity across domains/tasks/contexts is not to be rejected in helping with the transfer activation, it is nevertheless the writers' *inductive* mechanisms at work, rather than the feature-based symmetricity, which can turn the writers' acquired knowledge into true adaptive transfer. The latter type of transfer (feature-based symmetricity) may at best be viewed as *transductive,* indicating the resemblance-based transfer of some skills from one to another task. To relate this point to the study results, note that the writing class provided a general domain of L2 writing for all the students in the class but the tasks and situations that students got involved in later as their projects were not completely identical. This brings us to the concluding point that writers not only acquire declarative knowledge but also the processing or procedural knowledge which operates actively by redeploying the regularities and also avoiding irregularities, as shown in our results above, across domains and contexts. The process of 'avoidance' discovered in this study is of special significance because it arguably proves the

writers' informed processing role in the adaptation of their learning. Viewed in the traditional perspective of transfer, that role could have resulted in the negative transfer of learning since learners would not presumably have been able to distinguish the appropriacy of the link between source and target to exercise avoidance. Thus, as Depalm and Ringer (2011) say, individual writers are 'locus of transfer' meaning that they are able to consciously appropriate the knowledge of the conventions about a discourse domain.

Limitations and Future Directions

There are several important limiting points concerning this study to be considered so that future investigations may address them more effectively.

One important point to note is that in this study the transfers not directly linked to the points in the course book have been identified as adaptive transfers. In other words, adaptivity of the transfers in this study was established through the participants' claims elicited through delayed retrospection, which could be obviously unrealistic. So, both transfers and processes identified may not be taken as truly expressive and accurately representative of the underlying construct as the method of analysis lacks rigidity. To bridge this gap, one possible solution is to rely on think-aloud protocols in future studies. As adaptivity of transfer remains dynamic and individualized, whatever the method of analysis, the results have to be interpreted cautiously.

In analyzing the types and processes of transfers, their one-on-one relation was not taken into account, for the fact that transfers were sometimes shown to be realized through more than just one process making the clear-cut analysis difficult. However, in future studies with more focused method designs, the investigations can illuminate how the two may link together.

Due to the nature of the study, the number of participants was limited which could, in practice, affect the generalizability or external validity of the results. In future studies, some larger groups may be investigated through some post-treatment questions to be administered in writing about the adaptive transfers of the skills rather than the interviews that can be intolerably time-consuming for both interviewers and interviewees and thus inefficient.

This study did not decide on the participants' language competence at the beginning of the course. If the study of adaptive transfers is to be done in the second language writing class, it is suggested that participants are assessed for their level of proficiency since it seems that novice writers are more likely to be direct transferors of the skills as opposed to the advanced ones who are expected to be transformers of the skills (i.e., adaptive transfer).

And finally, as adaptive transfers are assumed to be idiosyncratic and multilingual

(Canagarajah, 2006), it is suggested that some future studies address the topic across different languages and also individuals of different backgrounds to find out more on the ways adaptive processes unfold.

References

Beach, K. (1999). Chapter 4: Consequential Transitions: A Sociocultural Expedition Beyond Transfer in Education. *Review of Research in Education*, *24*(1), 101–139.

Berman, R. (1994). Learners' Transfer of Writing Skills between Languages. *TESL Canada journal*, *12*(1), 29-46.

Bransford, J. D., & Schwartz, D. L. (1999). Chapter 3: Rethinking transfer: A simple proposal with multiple implications. *Review of research in education*, *24*(1), 61-100.

Burke, K. (1966). *Language as symbolic action: Essays on life, literature, and method*. Univ of California Press.

Canagarajah, A. S. (2006). Toward a writing pedagogy of shuttling between languages: Learning from multilingual writers. *College English*, *68*(6), 589-604.

Carrol, L. A. (2002). *Rehearsing new roles: How college students develop as writers*. SIU press.

Connor, U. (1996). *Contrastive rhetoric: Cross-cultural aspects of second-language writing*. New York: Cambridge University Press.

Currie, P. (1999). Transferable Skills: Promoting Student Research. *English for Specific Purposes*, *18*(4), 329-345.

DePalma, M. J., & Ringer, J. M. (2011). Toward a theory of adaptive transfer: Expanding disciplinary discussions of "transfer" in second-language writing and composition studies. *Journal of Second Language Writing*, *20*(2), 134-147.

Detterman, D. K. (1993). The case for the prosecution: Transfer as an epiphenomenon. In Douglas. K. Detterman & Robert. J. Sternberg (Eds.), *Transfer on trial: Intelligence, cognition, and instruction* (pp. 1–24). Norwood, NJ: Ablex Publishing Corporation.

Downs, D., & Wardle, E. (2007). Teaching about writing, righting misconceptions: (Re) envisioning" first-year composition" as" Introduction to Writing Studies". *College composition and communication*, 552-584.

Grabe, W., & Kaplan, R. B. (1989). Writing in a second language: Contrastive rhetoric. In D. M. Johnson & DH Roen (Eds.), Richness in writing: Empowering ESL students (pp. 263–283).

Grujicic-Alatriste, L. (2013). A response to DePalma and Ringer's article "Toward a theory of adaptive transfer: Expanding disciplinary discussions of 'transfer' in second-language writing and composition studies". *Journal of Second Language Writing*, *22*(4), 460-464.

Hansen, J. G. (2000). Interactional conflicts among audience, purpose, and content knowledge in the acquisition of academic literacy in an EAP course. *Written Communication*, *17*(1), 27-52.

Haskell, R. E. (1998). *Reengineering corporate training: Intellectual capital and transfer of learning*. Westport, CT: Quorum Books.

Haskell, R. E. (2001). *Transfer of learning: Cognition, instruction, and reasoning*. San Diego, CA: Academic Press, Incorporated.

Hill, C., Khoo, S., & Hsieh, Y. C. (2020). An investigation into the learning transfer of English for specific Academic Purposes (ESAP) writing skills of students in Singapore. *Journal of English for Academic Purposes*, *48*, 100908.

Ho, C. H. (2018). *Learning Transfer from an English-for-general-academic-purposes (EGAP) Course to Nursing Courses in a Hong Kong University: A Case Study*. The Chinese University of Hong Kong (Hong Kong).

Horner, B., & Lu, M. Z. (2007). Resisting monolingualism in 'English': Reading and writing the politics of language. *Paper presented at the University of New Hampshire*.

James, M. A. (2006a). Transfer of learning from a university content-based EAP Course. *Tesol Quarterly*, *40*(4), 783-806.

James, M. A. (2006b). Teaching for transfer in ELT. *ELT journal*, *60*(2), 151-159.

James, M. A. (2008). The influence of perceptions of task similarity/difference on learning transfer in second language writing. *Written Communication*, *25*(1), 76-103.

James, M. A. (2009). "Far" transfer of learning outcomes from an ESL writing course: Can the gap be bridged? *Journal of Second Language Writing*, *18*(2), 69-84.

James, M. A. (2010). An investigation of learning transfer in English-for-general-academic-purposes writing instruction. *Journal of Second Language Writing*, *19*(4), 183-206.

Johns, A. M. (1988). The Discourse Communities Dilemma: Identifying Transferable Skills for the Academic Milieu. *English for Specific Purposes*, *7*(1), 55-60.

Johns, A. (1997). Text, role and context: developing academic literacies Cambridge University Press.

Jordan, R. R. (1997). *English for academic purposes: A guide and resource book for teachers*. Cambridge, UK: Cambridge University Press.

Jwa, S. (2019). Transfer of knowledge as a mediating tool for learning: Benefits and challenges for ESL writing instruction. *Journal of English for Academic Purposes*, *39*, 109-118.

Kang, S. J. (2005). Dynamic emergence of situational willingness to communicate in a second language. *System*, *33*(2), 277-292.

Kaplan, R. B. (1966). Cultural thought patterns in intercultural education. *Language learning*, *16*(1), 1-20.

Kobayashi, H., & Rinnert, C. (2008). Task response and text construction across L1 and L2 writing. *Journal of Second Language Writing*, *17*(1), 7-29.

Kubota, R. (1998). An investigation of L1–L2 transfer in writing among Japanese university students: Implications for contrastive rhetoric. *Journal of Second Language Writing*, *7*(1), 69-100.

Leki, I., & Carson, J. G. (1994). Students' perceptions of EAP writing instruction and writing needs across the disciplines. *TESOL quarterly*, *28*(1), 81-101.

Leki, I. (2003). Living through college literacy: Nursing in a second language. *Written communication*, *20*(1), 81-98.

Leki, I. (2007). *Undergraduates in a second language: Challenges and complexities of academic literacy development*. New York: Lawrence Erlbaum Associates.

Lobato, J. (2003). How Design Experiments Can Inform a Rethinking of Transfer and Vice Versa. *Educational researcher*, *32*(1), 17-20.

Lunsford, A. A. (2010). *The St. Martin's handbook*. Boston, MA: Bedford St. Martin's.

Matsuda, P. K. (1997). Contrastive rhetoric in context: A dynamic model of L2 writing. *Journal of second language writing*, *6*(1), 45-60.

Matsuda, P. K. (2002). Alternative discourses: A synthesis. In C. Schroeder, H. Fox, & P. Bizzell (Eds.), *ALT/DIS: Alternative discourses and the academy.* Portsmouth, NH: Boynton/Cook.

McCarthy, L. (1987). A Stranger in Strange Lands: A College Student Writing across the Curriculum. *Research in the Teaching of English, 21*(3), 233-265.

Parks, S. (2001). Moving from school to the workplace: Disciplinary innovation, border crossings, and the reshaping of a written genre. *Applied Linguistics*, *22*(4), 405-438.

Perkins, D. N., & Salomon, G. (1994). Transfer of learning. In Husen, T., & Postlethwaite, T. N. Eds. *The international encyclopedia of education.* Vol. 11 (pp. 6452–6457). Oxford, UK: Pergamon.

Petraglia, J. (1995). Introduction: General writing skills instruction and its discontents. In Joseph Petraglia (Ed.), *Reconceiving writing, rethinking writing instruction* (pp. xi–xvii). Mahwah, NJ: Lawrence Erlbaum.

Pierce, K. A., Duncan, M. K., Gholson, B., Ray, G. E., & Kamhi, A. G. (1993). Cognitive load, schema acquisition, and procedural adaptation in nonisomorhpic analogical transfer. *Journal of Educational Psychology, 85*(1), 66–74.

Russell, D. (1995). Activity theory and its implications for writing instruction. In Joseph Petraglia (Ed.), *Reconceiving writing, rethinking writing instruction* (pp. 51–77). Mahwah, NJ: Lawrence Erlbaum.

Silverstein, L. B., & Auerbach, C. F. (2003). *Qualitative data*. New York: NYU Press.

Simpson, J. M. (2000). Topical structure analysis of academic paragraphs in English and Spanish. *Journal of Second Language Writing*, *9*(3), 293-309.

Smit, D. W. (2004). *The end of composition studies*. Carbondale, IL: Southern Illinois University Press.

Strauss, A. L. (1987). *Qualitative Analysis for Social Scientists*. New York: Cambridge University Press.

Spack, R. (1997). The acquisition of academic literacy in a second language: A longitudinal case study. *Written communication*, *14*(1), 3-62.

Wardle, E. (2007). Understanding 'transfer' from FYC: Preliminary results of a longitudinal study. *WPA: Writing program administration*, *31*(1-2), 65-85.

Wardle, E. (2009). "Mutt Genres" and the Goal of FYC: Can We Help Students Write the Genres of the University? *College Composition and Communication, 60*(4), 765-789.

Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. New York: Cambridge University Press.

Zarei, G. R., & Rahimi, A. (2014). Learning transfer in English for general academic purposes writing. *SAGE Open*, *4*(1), 2158244013518925.

Appendix A

A summary of instructional points based on the book '*The St. Martin's Handbook, 6th Edition* (Lunsford, 2010).

Week	Instructional points
1-2	Preparing to meet expectations of writers and readers in college; Reading and writing processes; Rhetorical situations: problems, topics, audience
3-4	Visual thinking; Exploring a topic; Narrowing a topic; Drafting a working thesis; Gathering information, organizing information, planning and drafting; Reviewing, revising and editing
5-6	Analyzing arguments; Critical thinking; Elements of an argument; Constructing an argument; Organizing an argument
7-8	Preparing for a research project; Evaluating sources and taking notes; Integrating and acknowledging sources; Writing a research project (MLA, APA, Chicago, CSE style);
9-10	Effective language use, language variety, word choice, sentence grammar, sentence clarity; Sentence style; Punctuation
11-12	Mechanics: capital letters, abbreviations, italics, hyphens
13-14	Multilingual writers: writing in academic contexts, clauses and sentences, nouns and noun phrases, verbs and verb phrases, propositions and prepositional phrases
15-16	Academic and professional writing, academic work in any discipline, writing for the humanities, writing for the social sciences, writing for the natural and applied sciences, writing for business, essay examinations and portfolios

Appendix B

A summary of Interviews both for transfer and process identification (Translated from Persian)

First, explaining the purpose of the interview: As already made clear, this interview is intended to discover how your writing is related to our writing course. In other words, this is supposed to tell us what part of your writing can be traced back to the instructional points in the classroom and how you have managed to arrive at the reconstruction of the studied activities.

Questions:

1. Do you think your writing on the whole draws upon the class instruction? Which part/s? (If indirectly related, then taken down as adaptive transfer (otherwise ignored) for the next step: Explain how you reformulated it into your work!

2. Referring to both sentences one by one and their combinations,.. up to paragraphs, participants were further asked, 'Do you find any link with the course?'.

3. Is this link (you have found) directly taken/copied from your instruction? Which one? Showing him/her the list of book-based activities for quick reference. If indirectly related, then marked as adaptive transfer for the next step: Explain how you reformulated it into your work!

4. Do you see anything thus relevant about the writing course for the sentences put together in the whole writing? Explain how you arrived at this point?

5. As a final point, what other aspects of your writing have been modified based on the writing course?

NOTE: The process-related interview was conducted 10 days after the identification of the types of adaptive transfer in order to keep the two events as far unconflated as possible.

AREL