

Managing Cognitive Complexity of Academic Writing Tasks in High Stakes Exams via Mentor Text Modeling: A Case of Iranian EFL Learners

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Abstract

Cognitive complexity is traditionally used for describing human cognition along a simplicity-complexity axis in tests like TOFEL IBT and GRE where text creation and rhetorical organization are quintessentially important. Accordingly, this study sought to investigate the impact of mentor text modelling on cognitive complexity of academic writing tasks in terms of students' responses to the test inputs. For this purpose, from the population of applicants applying for various high stake exams at Jihahde Daneshgahi, Isfahan University, three intact classes were selected based on a convenient sampling method. The students, both male and female, were graduates from various majors in applied sciences whose age range was between 24 and 29 and they had all passed the preparatory classes required for attending academic writing courses. Each targeted class with twenty-five applicants was concurrently programmed for three writing tasks with various cognitive complexity levels: Independent, integrated, and analytical. The classes, a total of 75 EFL learners, were randomly assigned to three equal groups labeled as product based (PBG), process based (PRBG), and mentor text modeling (MTMG) respectively. Employing a posttest only quasi-experimental design, learners in the three groups received their instruction on advanced writing during a sixteen session course. The learners in each group were taught based on the selected writing approaches. At the end of the treatment, the learners' writing performance was assessed on test tasks within the pre-specified time and word limits by utilizing a relevant posttest. Data analysis reflected that mentor text modeling enjoyed a potentially higher pedagogical efficacy since the learners in the MTM experimental sample performed better in terms of both accuracy and fluency compared with the groups receiving their writing instruction through either product or process based approaches. Notably, the findings revealed that mentor text modeling is a functionally dependable resource for managing writing tasks cognitive complexity and neutralizing the trade-off effect between accuracy and fluency by offering insightful pedagogical hints to EFL teachers, test takers, and writing material developers who have always had a hard time calibrating writing accuracy and fluency in high stake exams.

Keywords: academic writing, accuracy, cognitive complexity, fluency, high stake exams, mentor text modeling

1. Introduction

As registered trademarks of Educational Testing Services (ETS), which are administered worldwide, TOEFL IBT and GRE may be regarded as high stakes tests with important consequences for the test takers because the results on such tests are often used to make significant educational decisions about students (Corden, 2007). Being a quintessentially important part of these tests, writing is considered a credible predictor of students' academic achievements. Among various modules of such ETS instruments, the writing section tends to assess the test taker's language ability in articulating and developing complex ideas in order to provide a focused and coherent argumentative stance for the proposed writing tasks. To this end, test takers need to analyze the task argument by presenting their personal perspectives on the issue suggested by the writing topic. The main reason is that at the university level, students are required to display their disciplinary knowledge and understanding through the medium of writing whereby they exhibit their skills in choosing an appropriate writing style for developing an argument and addressing a specific audience (Bloom, 2010). Consequently, as Applebee and Langer (2006) state, writing should be viewed as a teaching / learning tool which not only facilitates the understanding of materials but it also activates learners' levels of critical thinking.

Academic writing plays a pivotal role in higher education where learning and academic achievement are intrinsically entwined with learners' abilities to engage with the writing process as a meaningful medium used in diverse contexts. Through the application of linguistics and rhetorical alternatives to create various instances of discourse, student writers may enable themselves to perform their writing tasks after careful analysis of the complex variables comprising different registers. Consequently, curriculum development of English language based on current precepts and practices regarding academic writing ability has become a top priority simply because it engages learners in undertaking assignments which require an intense cognitive planning involving the use of lexico-grammatical resources and stylistic conventions drawing on appropriate reasoning strategies (Foltz, Laham, & Landauer, 1999). In other words, writing literacy is a much needed requirement for the students to function efficiently in academic contexts. As such, it is quite logical for education experts to rethink instructional practices to ensure the highest level of academic success for students. Notably, academic writing can be utilized as a pedagogical alternative for improving and consolidating retention (Cheng, 2015).

The necessity of showing mastery over the application of academic writing capability with sound grammatical knowledge and semi technical /technical vocabulary to create the required quality texts is certainly one of the vital goals at tertiary level programs. The studies related to EFL students' English language ability, especially, those focused on academic writing skills have revealed a multitude of problems that influence the students' progress at higher educational levels. The findings reflect that the majority of students are constrained with such writing as deficiencies as tenses, ambiguous or loose sentence construction, sentence constructions with faulty parallelism, flaws in sentence surface and deep structures, poor choice and use of diction, and lack of familiarity with stylistic conventions, as well as inability in transforming or rephrasing texts for synthesizing information as a member of discourse community to which they belong all prove that these students are not well prepared to meet the demands of the specified objectives in post graduate studies. In other words, they are not well-versed with academic writing principles in disciplines with genre-specific conventions (Hyland, 2003). All in all, the research studies conducted in various settings invariably demonstrate similar types of linguistic problems encountered by EFL learners at tertiary level of education in both general English writing as well as research writing.

Consequently, the need for finding new pedagogical alternatives to implement writing to increase learning in all content areas has had a great bearing on teaching writing skills to tertiary level EFL learners. In point of fact, reaching and practicing writing strategies such as summarizing, outlining, underlining and note-taking should be used as ways to highlight and organize important points dominating academic writing assignments (Kormos, 2011). The students should be helped to learn accurate ways of text creation and the techniques they need to model writing tasks accordingly. Unsurprisingly, in high stakes tests like TOEFL IBT and GRE, the students' passing the cut off criterion or domain ability as masters is very crucial so much so failing can seriously jeopardize the students' academic success tremendously. Because success on such

high-stakes tests has become especially important popular in undeveloped and developing countries where passing the tests serves as an index of submitting EFL learners in various disciplines to academic programs offered by prestigious universities. In other words, the results of high stakes tests have a considerable weight in the admissions process since many university administrators believe that the results on such tests has clear consequences for doing well or poorly in related academic programs targeted by foreign students. Therefore, the college candidates who are anxious to have the benefits of attending a quality university invest on learning academic writing skills by enrolling in various preparatory writing programs.

These sensitivities have caused students from different disciplines to look for preparatory programs to improve their performance effectively. Test preparation is defined as "any intervention procedure specifically undertaken to improve test scores, whether by improving the skills measured by the test or by improving the skills for taking the test, or both" (Graham & Perin, 2007). By enrolling in the right programs, test takers seek to improve their test scores by learning how to cope with both cognitive and non-cognitive aspects of test preparation. There are basically three categories guiding preparation programs: (a) test-taking orientation, (b) coaching, and (c) training in broadly applicable cognitive skills. These different but complementary objectives tend to help candidates to become familiar with the testing procedures by the aid of an experienced mentor through the application of intense and short-term practice on similar item formats offered by related testing companies. Overall, the candidates receive help on how to improve their cognitive abilities and thus to enhance test performance quality (Nguyen, 2007; Issitt, 2008).

Courses specifically targeting academic writing in high stakes exams mostly address writing accuracy, fluency, and cognitive complexity of language tasks since these factors play an important role in the quality of task performance and in the language features required for fulfilling such tasks. Understanding of key cognitive

complexity factors and the roles they play in learners' writing performance can enable them to progress along and manage tasks of increasing complexity in order to develop their interlanguage in general and writing performance in particular progressively. Robinson (2007a) believes that task characteristics can greatly influence the individuals' management and control of attention, memory, reasoning and other processing resources. Notably, the body of work examining the relationship between the cognitive complexity of tasks and task performance has invariably involved certain factors such as linguistic complexity, linguistic accuracy, and fluency (collectively known as CAF). Alternatively, the related research has strived to find out the predictive power of the CAF features on writing quality for tasks of various cognitive complexity (Bogard & Mackin, 2015). Since the writing tasks in TOEFL IBT and GRE are argumentative in nature, they seem to demand greater reasoning in comparison to other modes of writing like expository texts. Due to different cognitive demands intrinsic in these rhetorical tasks, it is important for the learners to pay special attention to the cognitive processes underlying levels of cognitive complexity that may affect performance criteria like linguistic fluency and accuracy. Such language production features as total number of words generated, lexical sophistication, and accuracy of language production are common core based on which writing quality is assessed through the application such measures as mean length of T-unit (MLTU), clauses per T-unit (C/TU), and mean length of clause (MLC).

Cognitive information processing approach is one of the prevalent approaches to task-based language teaching. Within this approach, there are two competing models which clarify the significance of cognitive task complexity and its influence on linguistic performance in terms of fluency, accuracy, and complexity. The first model introduced by Robinson (2001, 2003) is called "Cognition Hypothesis" and the second by Skehan (1998) is named "Limited Attentional Capacity Model" (Kuiken & Vedder, 2007). Cognitive task complexity model assumes that refers to those task features which have a substantial effect on cognitive demands of the tasks and learners' performance. As an illustration, in dealing with academic writing tasks the learners need to direct their full attention to all aspects of the task in order to satisfy the scoring criteria underlying the targeted writing tasks. In other words, the mental processes involved in performing a given a task are functionally linked with the capacity of working memory and learners' perceptions and attitudes about the task and how it may successfully be completed. By contrast, in the Skehan's model of task difficulty, tasks are regarded as a crucial factor in activating learners' attentional control and its supervision in relation to the existing task demands. The task difficulty model draws on information processing theory assuming that the capacity of human mind is limited so much so learners, particularly those with low language proficiency level, cannot give their full attention to all aspects of the task including fluency, accuracy, and complexity simultaneously. It has been found out that the cognitive load of task complexity will, in turn, influence accuracy and complexity, while at the same time decreases fluency. Essentially, there is some kind of trade off effect between such task performance standards. Not surprisingly, there is a powerful need for satisfying all these requirements by applying a model of instruction which can cater to the learners' ability in fulfilling the standards that are an important part of the scoring grid in high stakes exams.

1.1 Review of Literature

The origins of CAF can be traced back to 1980s research on L2 pedagogy the distinction between fluent and accurate L2 usage was thought to be important parameters in investigating the development of written and oral L2 proficiencies L2 contexts. One of the earliest attempts on testing the dichotomy was made by Bloom (1984) who distinguished between fluency-oriented and accuracy based activities. The findings reflected while the former foster spontaneous oral L2 production, the latter aimed at measuring the accurate use of linguistic forms and the controlled production of grammatically correct linguistic structures in the L2 utterances. Complexity, however, was added in the 1990s, following Skehan's (1998) model addressing CAF in terms of three principal proficiency dimensions. It was reported that the quality of writing was not restricted to the learning of linguistic items and gaining mastery over different dimensions of performance because individuals learned to produce L2 output both oral and written modes of communication influenced by different factors. Nunan (2002) rightly enumerates the significance of certain factors including personality types, self-regulation, self-esteem, and creativity which are considered as personality traits impacting language learning, especially productive skills. It seems that language production a plethora of factors among which attention on CAF have gained more prominence.

Today, it is becoming increasingly important to examine nonnative EFL students' problems in developing high quality academic writing skills. Consequently, teachers are carefully focusing on the pedagogical utility of the techniques they use for teaching writing to their students. Traditional approaches to writing focus on written products. Teachers evaluate the written product, judge its form and content, according to a predetermined set of

criteria. Under such perspectivization, writing is regarded as something that teachers expected learners to do in class without giving any prior thought to the meaning of the finished product (Meriwether, 1997). According to Naoroji (2012), the product approach is, „Mindless, repetitive, anti-intellectual“ because it merely resulted in mindless copies of a particular rhetorical plan or style. The reason is that the product paradigm is rooted in the behaviorist theory of language whereby language is considered a system of structurally related elements for the coding of meaning, and the main objective for the learners was to become well versed in applying the elements of the system (Richards & Renandya, 2002). As a result, in this approach the learners are mostly preoccupied with forms and correctness which are essential characteristics of the product approach. However, the critics of the approach maintain that the composing process in product based learning is linear making teachers and learners proceed systematically from prewriting to writing to rewriting. On this basis, many teachers stress the process approach to academic writing because it is believed that the product approach limits writers to a single production of a given text as opposed to the multiple rewrites allowed in process writing. In other words, while allowing a certain amount of revision, product writing seriously underestimates the importance of rewriting in general since the teacher is not only pre-occupied with grammatical accuracy, but also acts as an authority in making judgments about students' writing rather than acting as a facilitator. This scenario unfortunately continues to influence L2 writing classroom practices today. However, concerned practitioners feel that there is more to writing than the product approach offers. Therefore, the shift of pendulum has shifted towards a widespread recognition that writing is a process (Dorftman & Cappelli 2007).

According to Kane (2012), the process approach was developed due to teachers' reaction to the limitations presented by the product approach. The idea that students need to experience the writing and composing of their own texts was alien to these earlier methods (Lyne & Cappeli, 2007). Consequently, the focus of writing instruction shifted from the product to the process whereby the novice writers are exposed to various stages which Graves (1996) describes as: Brainstorming/pre-writing, drafting, revising, editing and publishing. The common assumption is that the process based approach empowers the students helping them to make decisions about the direction of their writing through discussions, tasks, drafting, feedback and informed choices as well as encouraging them to be responsible for improving their writing standards (Nueva 2016). Notably, writing is viewed as a process in which students are given a sufficient amount of time to think about and discuss their ideas on a specific topic, to write a draft or framework for what they want to say, to discuss deficiencies in order to create a more comprehensive text. The process based approaches focus on a number of stages where higher order levels of thinking are very important. Stages like brainstorming, planning / structuring, and mind mapping help learners to create their first writing draft, while those like peer feedback and editing have a great bearing in the preparation of the required final draft which is further refined by teachers' evaluation of the finished product.

Students' writings are evaluated and teachers. On this basis, as Kroll (2001) states, the “process approach” serves today as an umbrella term for many types of writing Courses. What the term captures is the fact that student writers engage in their writing tasks through a cyclical approach rather than a single-shot approach”. Therefore, the main objective in adopting the process approach is to focus more on various classroom activities which result in the spontaneous development of language use (Michel & Kuiken, 2007).

Unfortunately, in most academic writing classes, both teachers and learners tend to concentrate on product based drills for the purpose of consolidating grammar accuracy. The reason is that accuracy is regarded as an important aspect of language learning without which students may have difficulties in formulating their messages. This approach exploits the activities such as planning, generating, and revising. This writing approach encourages students to use their linguistic knowledge focusing on surface aspects of text production for ensuring grammatical accuracy (Pallant, 2007). Unlike product based approaches, process writing On the other hand, some writers (Balakrishnan, 2010) assert that the benefit of producing several drafts before submitting the final draft may be useful because it helps students to exercise critical thinking focusing more closely on content (Trejo, 2014). As Sakoda (2008) maintains, process-based method can enhance the students' writing skills and fluency because such elements as interaction between teachers and learners as well as the natural flow of feedback can help support the communicative nature of the English writing . More notably, both teacher and peer feedback are very crucial elements in the students' writing because it will motivate the students' writing skills. Being willing to write more, which is perhaps the best way to refine one's writing, learners eventually pay more attention to what they write. Positive comments provided by teachers can influence students' writing skills positively (Ortenburger, 2013). Producing several drafts in process writing helps the development of learners' general cognitive skills of reasoning and logical thinking which have a great bearing on wetting fluency (Meyers, 2019). However, in choosing the product versus the process writing approach, teachers experience what is called the trade-off effect between fluency and accuracy in writing (Robinson, 2007)

To neutralize the impact of the tradeoff effect between accuracy and fluency, some writers have suggested the use of mentor text modelling as a logical solution (Spigelman & Grobman, 2005). Mentor texts are high quality prototypes or ideal examples of the types of texts with optimal stylistic features that teachers wish to observe in their students' academic writing assignments. It is believed that mentor texts can be very powerful teaching and learning tools that can help improve EFL learners' writing proficiency because they provide concrete examples of what teachers expect from their students in the writing process helping students' understanding of writing in various genres or formats effectively (Rusinovci, 2015). The application of mentor text modelling in the L2 writing classroom focuses on the idea of employing a high quality example of a given text as a pedagogical prototype dominating all aspects of writing instruction. Differently stated, mentor texts provide students with ideal platforms which students imitate in their own writing. By incorporating the mentor text stylistic features into their own writing, students are able to make connections to the targeted author's writing skills and exploit them in the writing process. In this approach, the writing instruction generates a strong teacher-student interaction which rolls on the basic tenets of Vygotsky's (19xx) view of sociocultural theories of learning particularly the Zone of Proximal Distance (ZPD). The text model serves as an optimal product which the novice writer analyzes and learns how to copy its styles and techniques in order to reproduce and emulate the fine sensitivities of writing style practiced by the master (Dorfman & Cappelli, 2007).

Despite their remarkable versatility, mentor texts are used as a model of what the teacher wants the students to do. They can be used as a reference when drafting and can facilitate the revision process by directing learner's attention to features defining the scoring criteria in high stakes exams. Being examples of professional writing, mentor texts can be a valuable resource by which students can compare and contrast their own writing with the stylistic and textual features of the model to see how far off their writing is from the standards set by expert writers. Therefore, choosing the right kind of mentor text model is very important for the teacher because it should reflect principal elements or aspects of a particular type of writing that the students must focus on. Hence, students use mentor texts as models of analysis in order to apply the writing lessons they have learned in their own writing assignments. For instance, students can pay particular attention to the linguistic and stylistic specifications which determine the grade level standards that are crucial to obtaining a satisfactory score in high stakes tests. Notably, students need to focus on the structure, language use and other targeted elements of writing in the mentor text to compensate for their lack of experience in L2 writing processes. It is strongly believed that mentor text modelling provides the novice writers with the same helpful advice as an educator or counselor does. Writing skills may develop not only through the help provided by individuals, but it also improves by the priceless contribution of the mentor texts by observing the writing moves used by a well-versed author and the way s/he has communicated his/her message, the learners increase their knowledge of diction, sentence structure, use of literary devices, etc. Naturally, the application of mentor texts should be linked with other high quality instructional practices utilized by the teachers. All in all, relying on well-written mentor texts, teachers can show the learners the way other writers have addressed similar issues (Graham & Perin, 2007).

Studies focused on investigating the pedagogical effectiveness of mentor texts have increased considerably in recent years. Pytash and Morgan (2014) in a meta-analysis research found that the targeted evidential basis supports the utility of mentor texts in actualizing the learning of common core writing standards required by learners in writing classrooms. In another study (Sun & Feng 2009), working on kindergarten samples, discovered that mentor texts can lead to early emergent literacy mainly among male students. Sutikno (2008) also found that incorporating mentor texts in student writers' workshop mini lessons improves students' time on task while writing after the use of mentor models.

Focusing on university level students in a bilingual setting Klimova (2014) found that a writing instructional design based on mentor texts could cater to the writing needs of the learners by improving their production of academic texts positively. In another similar study, building on the work of Dorfman and Cappel (2002), reported that by imitating mentor texts, novice writers learn how to overcome their writing problems and continue to grow as writers. In another related study on the application of mentor texts involving elementary samples, Shahrokhi Mehr (2017) concluded that mentor texts are effective because nobody but a reader can find the appropriate ways to writing efficiently.

These selective studies have all focused on studying the pedagogical potentials of mentor texts in writing contexts involving different age and educational levels. However, Most instances of research concerning academic writing have so far focused on the contributory role of mentor texts in neutralizing the trade-off effect between accuracy and fluency in the writing performance of applicants in writing exams like TOEFL IBT and GRE. On this basis, the present study aimed at investigating the issue from a new perspective; namely, how it is possible to manage the cognitive complexity of Academic Writing Tasks in High stakes Exams via Mentor Text

modeling.

1.2 Research Questions

- 1) Does using mentoring improves accuracy of writing tasks with different cognitive complexity levels vs product based teaching versus process based teaching?
- 2) Does using mentoring improves fluency of writing tasks with different cognitive complexity levels vs product based teaching versus process based teaching?

2. Methodology

A pre-test and post-test quasi experimental design was utilized whereby the influence of mentor text modeling on writing characteristics such as accuracy, fluency and cognitive complexity was considered. Operationalization of variables is linked to the way variables are conceptualized. The variables in this study including accuracy, fluency, and cognitive complexity are described base on sharply defined features. Under such perspective, accuracy has been regarded as error free writing with acceptable stylistic conventions, while fluency refers to EFL learners' ability in completing the task response within the allotted time. Defined in a narrow sense, cognitive complexity is conceptualized in terms of the depth of mental processing when the task cognitive demands involves a more focused attentional control and multiple processing levels. low, mid, like independent writing tasks, which only involve the writing skills, integrated writing tasks expose learners to an additional cognitive load because in writing tasks writing also draws in reading and listening skills. Notably, the GRE writing tasks enjoys the highest level of cognitive complexity because the learners have to first identify argumentative fallacies weakening the substantial value of a given argument or proposition and suggest appropriate reasoning strategy which can eliminate the flaws underlying the targeted argumentation. On this basis, By preparing the required conditions, the main objective was to pinpoint the extent to which the application of mentor text modeling might affect the interplay between accuracy, fluency and cognitive complexity.

2.1 Participants

Three intact classes, 25 each were selected from of the population of students attending TOEFL IBT and GRE classes in Jahad Daneshgahi , Isfahan university , The age range of the students, both male and female was between 24 to 30 . They had already finished the preparatory courses required for beginning the TOEFL and GRE writing tasks within a full semester. Even though, the students came from different disciplines, their exposure to the same preparatory language institution programs served as a basis for ensuring that treatment and non- treatment groups enjoyed homogeneity. Each class was assigned to specific treatment, namely product, process and mentoring. Whereas product and process approaches to writing were utilized for the non-treatment groups, the treatment groups' instruction focused on the use of mentor texts which potentially offer the advantages of both product and process approaches.

2.2 Instrument

The instruments used in the study comprised a three-part pre-test and post-test writing tasks; namely, independent, integrated and GRE writing tasks. A note of caution deems necessary here. In both pre and post-tests, care was taken to make sure that the writing topics are similar in terms of learners' background knowledge and difficulty level. The validity of the tests was measured based on specialist opinion while the reliability was estimated by using KR-21 formula. The reliability indices for tests were 0.86 and 0.89 respectively.

2.3 Procedures

The three target groups were taught using different writing methods. The first group received instruction based on product based writing approach. the second group was taught by process-based writing approach and the experimental group was exposed to mentor text models. For the group taught by product writing, the teacher clearly specified the outcome specifications related to each of the three writing tasks. Using the ETS and GRE textbooks, the structural organization and semantic content of each writing task was clarified as a rudimentary step toward administrating the study treatment, all the subjects were pretested on both the TOEFL writing tasks both integrated and independent as well as the GRE analytical writing tasks, the subjects' writing tasks were then analyzed by two different raters evaluating the fluency and accuracy measures. Having been exposed in writing proficiency, the whole subjects received 30 hours of training for 7-week course on advance writing proficiency. The groups' members saw each other twice a week and each session took 120 minutes, all three groups were subjected to same authentic material including a six complete writing tasks, the only difference among these groups was the method applied to teaching writing. Subsequently, the vocabulary and grammar rules required for producing the intended writing tasks were explained in each session. Here in the following parts we describe

different sorts of writing training exploited in this research. The Coursebooks used for writing instruction for both control and experimental groups were ETS third edition textbook for TOEFL IBT and ETS GRE book published in 2010. The only difference was that the participants in the experimental class also received supplementary mentor texts on their writing tasks which modeled the stylistic, generic and structural excellence required as common scoring standards in the targeted TOEFL ibt and GRE exams. Notably, the classes in non-treatment supplies received instruction base on the pedagogical preferences advocated by product and process writing method. The papers were corrected by highly specialized language teachers who were familiar with the objectives of research in the other words, both inter-rater and intra rater reliability.

2.4 Product Based Approach (PBA)

The most traditional approach to writing, PBA, was considered in teaching the learners of product-based approach having been represented with sample of writing tasks, the instructor embarked to teach the linguistic structure, lexicon and general strategy to outperform the tasks. After many sessions of over-teaching of grammar and lexicon, the learner started writing applying what they have been taught. The instructor rated the learners' writing assignment and making brief comments about the needed revisions. In this group learners have no chance to deliver the composition with the required modification. Alternative versions of pre and post-tests, each comprising three writing tasks with various levels of cognitive complexity were utilized he test time was 80 minutes for independent writing, 30 minutes for integrated writing and 20 minutes for the analytical writing tasks respectively.

2.5 process Based Approach (PRBA)

The same textbooks were employed and structural/semantic attributes associated with each writing task were explained in details. However, the time in each class session was distributed on various stages such as topic clarification, brain storming, gathering ideas, writing the first draft, revising and creating the final draft. Alternative versions of pre and post-tests, each comprising three writing tasks with various levels of cognitive complexity were utilized the test time was 80 minutes for independent writing, 30 minutes for integrated writing and 20 minutes for the analytical writing tasks respectively After completion of final draft the learners in process group were asked to exchange their compositions with each other , so that every learner in the group was reader of his team-mate's work. Finally drafts were returned students have done the modifications based upon peer feedback. The final copies were given to the teachers.

2.6 Mentor Text Modeling Approach (MTMA)

The students in mentor text modeling group also used the same textbooks. The teachers' main focus was on the stylistic, linguistic, and generic features characterizing each model, both required vocabulary and grammar rules as well as adjectives that characterized the process writing approach were collectively used. The use of mentor text prototypes served as sign posts guiding the learners to acquire the writing strategies needed to cope with various academic writing tasks. Instructor also highlighted how the author used a variety of examples to support his claims, the instructor absorbed the class specifically to examine the data author used to support the main idea. Afterwards the learners were required to do the given writing tasks by themselves. Alternative versions of pre and post-tests, each comprising three writing tasks with various levels of cognitive complexity were utilized. the test time was 80 minutes for independent writing, 30 minutes for integrated writing and 20 minutes for the analytical writing tasks respectively. The tests were administrated in a friendly atmosphere and the examiner explained the test rubric in both English and Persian. The scoring procedure was based on accuracy and fluency. accuracy was defined as error-free sentences structure, and fluency learners' rate of writing speed – that is, finishing the assignment within the allotted time to satisfy the criterion of complete writing task response.

2.8 Data Analysis

The papers were corrected by highly specialized language teachers who were familiar with the objectives of research. A descriptive test was used to compute the descriptive statistics such as mean and standard deviation values. Subsequently, a two- way analysis of covariance, ANCOVA and (ANOVA) was used to examine the learners' writing performance on writing tasks. In order to answer the research questions and to examine the efficiency of mentor-text modeling in boosting the effect between accuracy and fluency in writing tasks with different levels of cognitive complexity.

3. Results

To investigate if there is any significant difference between the three study groups in terms of accuracy in writing tasks with different cognitive complexity levels estimated. Table 1 demonstrates the descriptive statistics of learners pre-test and post-test accuracy scores with a range of 0 to 10, in also all three study groups.

As demonstrated in Table 1 and Table 2, the detailed consideration of the learners' performance on the pre-test and post-test measures demonstrated a remarkable increase from the pre-test and post-test in mentor text. However, the greatest amount of improvement, estimated as the amount of difference between the pre and post-test mean scores, belonged to the mentor based group. The result also approved to a remarkable difference between learners' degree of accuracy in writing tasks with different CCL, demonstrating that the learners' accuracy in writing correlated negatively with tasks CCL.

Table 1. Descriptive statistics of the pre-test and post-test accuracy and fluency scores (average of three cognitive complexity levels in three groups)

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre.AC.Product	4.0833	20	.51725	.11566
	Post.AC.Product	7.5000	20	.52427	.11723
Pair 2	Pre.Flu.Product	3.5333	20	.61559	.13765
	Post.Flu.Product	4.8000	20	.48846	.10922
Pair 3	Pre.AC.Process	3.4333	20	.34370	.07685
	Post.AC.Process	4.4833	20	.57710	.12904
Pair 4	Pre.Flu.Process	3.4333	20	.34370	.07685
	Post.Flu.Process	7.0333	20	.47016	.10513
Pair 5	Pre.AC.Mentor	3.5333	20	.61559	.13765
	Post.AC.Mentor	7.9833	20	.88836	.19864
Pair 6	Pre.Flu.Mentor	4.0833	20	.51725	.11566
	Post.Flu.Mentor	8.9333	20	.47879	.10706

Table 2. Paired sample tests of all three groups

		Paired Differences	t	df	Sig. (2-tailed)
Pair 1	Pre.AC.Product - Post.AC.Product	-3.15920	-27.775	19	.000
Pair 2	Pre.Flu.Product - Post.Flu.Product	-.95630	-8.542	19	.000
Pair 3	Pre.AC.Process - Post.AC.Process	-2.75803	-21.864	19	.000
Pair 4	Pre.Flu.Process - Post.Flu.Process	-5.28554	-37.273	19	.000
Pair 5	Pre.AC.Mentor - Post.AC.Mentor	-3.89954	-16.920	19	.000
Pair 6	Pre.Flu.Mentor - Post.Flu.Mentor	-4.52404	-31.142	19	.000

In this study as mentioned in other parts (ANCOVA) investigated if there was a significant major impact for the various approaches to teaching writing as well as examining the significance of the interaction effect between the approaches and tasks' CCL.

Before performing the main analysis, all the assumptions requiring a two-way ANCOVA, were checked. Table 3 demonstrated a descriptive analysis of post-test of accuracy and then in Table 4 the result of the ANCOVA conducted on the accuracy scores in the three study groups are shown. Based on the finding in Table 4, the group's effect on the post-test of accuracy scores was significant $p < .001$. The difference between the three groups in post-test accuracy scores was found to be significant after pre-test. Having the significant difference between the three study groups in accuracy, Table 5 demonstrated the results of Bonferroni corrected post-hoc comparison to detect the location of difference based on the estimated means.

Table 3. Descriptive statistics of post-test accuracy

Dependent Variable: Posttest.Acc				95% Confidence Interval	
				Lower Bound	Upper Bound
Product	High	7.676 ^a	.280	7.123	8.229
	Moderate	7.280 ^a	.278	6.731	7.828
	Low	7.303 ^a	.294	6.722	7.884
Process	High	4.564 ^a	.307	3.958	5.171
	Moderate	4.633 ^a	.323	3.995	5.271
	Low	4.610 ^a	.304	4.010	5.211
Mentor	High	8.701 ^a	.258	8.191	9.211
	Moderate	7.549 ^a	.269	7.017	8.080
	Low	7.583 ^a	.276	7.039	8.128

Note. ariates appearing in the model are evaluated at the following values: Pretest.Acc = 3.0167.

Table 4. The result of ANCOVA in the accuracy scores in the three study groups

Dependent Variable: Posttest.Acc							
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	
Corrected Model	449.673 ^a	9	49.964	37.423	.000	.665	
Intercept	471.453	1	471.453	353.115	.000	.675	
Pretest.Acc	.629	1	.629	.471	.493	.003	
Model	154.349	2	77.174	57.803	.000	.405	
CCL	9.268	2	4.634	3.471	.033	.039	
Model * CCL	9.236	4	2.309	1.729	.146	.039	
Error	226.971	170	1.335				
Total	8650.000	180					
Corrected Total	676.644	179					

Note. a. R Squared = .665 (Adjusted R Squared = .647).

Table 5. Pairwise comparison between the three groups based on the accuracy

Dependent Variable: Posttest.Acc							
(I) Model	(J) Model	Mean Difference (I-J)	Std. Error	Sig. ^a	95% Confidence Interval for Difference ^a	Lower Bound	Upper Bound
Product	Process	2.817 [*]	.359	1.000	2.108	3.526	
	Mentor	-.525 [*]	.219	.018	-.958	-.092	
Process	Product	-2.817 [*]	.359	1.000	-3.526	-2.108	
	Mentor	-3.342 [*]	.312	.000	-3.959	-2.725	
Mentor	Process	.525 [*]	.219	.018	.092	.958	
	Product	3.342 [*]	.312	.000	2.725	3.959	

Based on estimated marginal means

Note. *. The mean difference is significant at the .05 level.

As Table 5 suggests, there was a significant difference between the mentor-based and process-based groups ($p < 0.00$). At the same time, the difference between the mentor-based approach and the product-base approach is significant as well. The only non-significant difference was found between the process-based and product approach groups.

Table 6. Descriptive statistics of post-test fluency

Dependent Variable: Posttest.Flu				
Model	CCL	Mean	Std. Deviation	N
product	High	4.7000	.92338	20
	Moderate	5.0000	.72548	20
	Low	4.7000	.92338	20
	Total	4.8000	.85964	60
Process	High	7.0500	.82558	20
	Moderate	7.0500	.75915	20
	Low	7.0000	.72548	20
	Total	7.0333	.75838	60
Mentor	High	8.9500	.82558	20
	Moderate	9.0500	.99868	20
	Low	8.8000	1.00525	20
	Total	8.9333	.93640	60
Total	High	6.9000	1.94588	60
	Moderate	7.0333	1.85917	60
	Low	6.8333	1.90598	60
	Total	6.9222	1.89517	180

Note. a. Covariates appearing in the model are evaluated at the following values: Pretest.Flu = 3.0167.

Table 6 displays the descriptive statistics of the learners' fluency scores. Fluency was defined as the average number of words written in the given time span for writing the tasks with various cognitive complexity level. As demonstrated in Table 6, in all 3 levels of CCL, the fluency scores boosted from the pre-test to the post-test. However, the difference between pre-test and post-test in product group seems to be insignificant.

Table 7 shows the results of comparing the effect of applying the three methods to teaching writing on the subjects' post-test fluency scores. Pairwise comparisons, as shown in Table 8, indicated significant differences between the mentor-based and process-based as well as the product-based group.

Table 7. ANCOVA results for fluency scores in all three study groups

Dependent Variable: Posttest.Flu						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	517.012 ^a	9	57.446	77.569	.000	.804
Intercept	492.638	1	492.638	665.204	.000	.796
Pretest.Flu	1.501	1	1.501	2.027	.156	.012
Model	502.818	2	251.409	339.475	.000	.800
CCL	1.595	2	.798	1.077	.343	.013
Model * CCL	.397	4	.099	.134	.970	.003

Error	125.899	170	.741
Total	9268.000	180	
Corrected Total	642.911	179	

Note. a. R Squared = .804 (Adjusted R Squared = .794)

Table 8. Pairwise comparison of groups for fluency scores

Dependent Variable: Posttest.Flu		95% Confidence Interval for Difference ^a				
(I) Model	(J) Model	Mean Difference (I-J)	Std. Error	Sig. ^a	Lower Bound	Upper Bound
Process	Product	-2.478*	.233	.000	-2.937	-2.018
	Mentor	-4.069*	.163	.000	-4.392	-3.747
Product	Process	2.478*	.233	.000	2.018	2.937
	Mentor	-1.592*	.268	.000	-2.120	-1.063
Mentor	Process	4.069*	.163	.000	3.747	4.392
	Product	1.592*	.268	.000	1.063	2.120

4. Discussions

4.1 Discussing the findings related to the first Research Question

Based on the results of quantitative analysis of data, mentor text was found to be the most efficient in boosting the learners' accuracy and fluency in writing tasks with different CCL. In other words among the three different approaches investigated in current study (i.e, product-based, process-based, and mentor text modeling) a mentor text modeling based approach was proved to be prior to process approach and product approach in terms of accuracy and fluency in writing without considering the level of cognitive complexity, in general finding approved the view often stated by scholars that application of mentor-based approach generates an accurate written crafts putting particular emphasis on accuracy of final product in terms of grammatical structure (e.g., Balakrishnan, 2010; Jouzdani et al., 2015; Sakoda, 2008, 2015; Sun, 2009).

The capability of mentor-text modelling and product-based approaches to develop accuracy could be ascribed to the same principles underlying the two approaches. as described, both the approaches investigate the idea of applying well-structured models to boost learners' writing proficiency. Another similarity between two approaches is being much more teacher-centered compared to process-based approach which is basically student-centered (Sakoda, 2008).

The efficacy of mentor-text modelling approach in developing the learners' accuracy and fluency, as demonstrated in this study, supported the result achieved by Kane (2012) who investigated the influence of mentor text enquiry approach to writing instruction on attitude, self-efficacy, and writing performance of fourth grade students in an urban elementary school. Applying a multiple case study design, she concluded that most of the students improved in areas of language structure, and organization.

Another possible explanation for efficacy of mentor text modeling approach in removing the compromise effect between accuracy and fluency would be regarded as the nature of mentor texts functioning as structured frameworks for teaching EFL learners how to write different texts. The learners in the mentor-based group were taught in efficient writing concentrating on different elements assisting to grammatical accuracy, as well as receiving teacher-led by teacher modeling, instruction on how to sufficiently convey their opinions concerning any given subjects.

The efficacy of mentor text modeling in removing the compromise between accuracy and fluency would be approved concluding a short review of the steps engaged in applying writing instruction based on such an approach through mentor text modeling, therefore, the learners may have applied a number of metacognitive strategies underlying the process approach, as well as benefiting the well-structured texts to develop a clear element of successful writing. Moreover, deconstructing the mentor texts, supported students chances to identify the debate how authors use language rhetoric and data to support claims and debate.

4.2 Discussing the Findings Related to the Second Research Question

Shifting the discussion's focus on to fluency, the results demonstrated a number of upcoming results. The quantitative analysis of the data demonstrated that mentor text modeling influenced the learners' fluency in writing tasks with all three levels of cognitive complexity significantly more than product and process based teaching. Mentor text modeling, however, was identified to be the most efficient approach to teaching writing.

The efficacy of process-based writing instruction in boosting fluency the learners' writing fluency, as suggested in this study, confirmed the view has been repeatedly testified by scholars that having learners to focus on the process engaged in writing rather than an unmitigated focus on the optimal written product can result in better writing performance (Barnett, 1992; Chenoweth & Hayes, 2003). This result is also consistent with the result drawn from Shahrokhi Mehr (2017) study which demonstrated that the subjects of the study who received process-based instruction overcome their counterparts in the product group in terms of fluency. Having potential efficacy of process-based approach in fostering writing fluency would be the fact that receiving instruction based on this approach can reduce the psychological barriers of writing in foreign language. Anxiety testified by Sawkins (1971) and Thompson (1981) would be considered as the most notable examples. The major reason for writing anxiety would be the learners' concerns about being assessed and, as a result, encountering the errors (Graves, 1994; Routman, 1996) implementing from a process-based writing instruction, learners' anxiety may be decreased to a great extent, thus, errors are considered to be reduced during the process of text production. Accordingly, learners can achieve a positive attitude in transferring their thoughts on a given topic with complete ease.

The proficiency of mentor text modeling to influence two sides of accuracy and fluency in writing positively, as demonstrated in this research, is in the same way with the theory assumed by Escobar Almeciga and Evans (2014) according to pedagogical experiment of looking for an approach planned to enhance academic writing capability. Applying mentor texts and coding academic writing structure, the study indicated that mentor text and the coding of academic writing structures may potentially have a positive influence on the exploiting of students' academic writing.

Graham and Perin's (2007) perspective about an effective sort of writing training could also supported this study's finding, suggesting that an efficient writing training must pay attention to task ,goals and audience as well as applying of revision and editing to develop writing. They approved that "as students repeatedly investigate models of efficient writing and try to clarified them, it is considered that they enhance better comprehension of the criteria pinpointing good writing" (Graham & Perin, 2007).

Applying mentor-texts would enable readers to critically analyze the author's intended meaning which provides chance to study the "writing moves" the writer has made to convey his or her message in all aspects like; word choice, sentence structures, use of cohesive device and etc.

5. Conclusion

In an EFL context, where English exposure is very restricted, achieving an agreement on the most efficient approach to teaching writing is of main importance. The current study examined the effect of three approaches; namely, process-based approach, product-based approach, and mentor-text approach on EFL learners' accuracy and fluency in writing tasks with various levels of cognitive complexity. A deep investigation of the three approaches suggesting that adopting a process-based approach performed higher degree of fluency than product-based approach by reducing the seriousness of psychological barriers hindering successful communication of the meaning such as anxiety and obsession with being grammatically right. On the other hand, product-based approach found to be much more useful in developing accuracy in writing with the target texts' quality such as punctuation. Mentor-text modeling, as a balanced approach containing product and process approaches perspectives, was identified to be effective in fostering both accuracy and fluency in writing and , as a result, deserved to be considered as an substitute to the two traditional and conventional approaches to teaching writing. The research also came to conclusion that the efficacy of the three approaches under examination was considered to be independent of writing task's level of cognitive complexity.

The study provided sufficient evidence for the view that engaging EFL learners in analyzing well-structured and authority-approved model text is a useful form of exposed to perfect responses to various writing tasks, EFL and ESL learners would be able to make much more assistance to the class analyzing the texts in groups, pairs, and individually.

Pedagogically, the effectiveness of mentor texts modelling approach in improving both accuracy and fluency, would persuade EFL teachers to adopt such an approach as an substitute to traditional method. Moreover,

syllabus designers in their efforts to achieve writing syllabuses are advised to include different kinds of mentor texts related to every writing tasks.

Containing both process and product perspectives in to a substitute instructional approach called mentor text modelling may have several pedagogical implications in EFL writing classrooms. Firstly such a combination use of both product and process approaches would help students foster cognitive skills such as critical thinking and problem solving while involving them in various pre-writing activities. This balanced focus on improving both cognitive and metacognitive strategies may boost simultaneous raise in accuracy and fluency in writing.

Additionally After deep investigation of three approaches, the result revealed that opposite to two conventional methods to teaching writing (i.e, process and product based approach) which fostered whether accuracy or fluency at the expense of the other, mentor text modeling influenced both accuracy and fluency at the same time in a positive way.

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