Research Paper

Effects of Genre-Based Pedagogy on Iranian Medical Researchers' Discussion Writing Ability

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Abstract

Genre-based pedagogy has gained a lot of attention since the mid-1980s. Genre is defined in relation to the use of language in conventionalized communicative situations. In this research, there was an attempt to scrutinize the effects of genre-based pedagogy on Iranian medical researchers' discussion writing ability. To examine the formulated hypotheses, A group of 35 subjects were randomly selected from medical researchers in Zanjan and Tehran Universities of Medical Sciences. Both male and female researchers were invited to this study. A within-group pre-test and post-test design was implemented. The instructional procedures went on for four sessions before the posttest was administered. The results of the paired *t-test* revealed that genre-based pedagogy had a significant effect on the discussion writing ability of Iranian researchers of medical sciences. Ultimately, in a Focus-group interview, the participants contended their expertise in writing significantly increased due to the treatment sessions. Implications of this study may include genre-based pedagogy in the Iranian ESP curriculum.

Keywords: Discussion writing ability; Genre-based pedagogy; Medical researchers

تأثیر آموزش ژانر محور بر توانایی بحث نویسی پژوهشگران پزشکی ایران

آموزش مبتنی بر ژانر از اواسط دهه ۱۹۸۰ توجه زیادی را به خود جلب کرده است. ژانر در رابطه با استفاده از زبان در موقعیت های ارتباطی متعارف تعریف می شود. در این پژوهش، تلاش شد تا تأثیر آموزش ژانر محور بر توانایی بحث نویسی پژوهشگران پزشکی ایران مورد بررسی قرار گیرد. برای بررسی فرضیه‌های تدوین‌شده، یک گروه ۳۵ نفری به‌طور تصادفی از بین محققان علوم پزشکی دانشگاه‌های زنجان و تهران انتخاب شدند. پژوهشگران زن و مرد هر دو به این مطالعه دعوت شدند. طرح پیش آزمون و پس آزمون درون گروهی اجرا شد. مراحل آموزشی قبل از اجرای پس آزمون به مدت چهار جلسه ادامه یافت. نتایج آزمون t زوجی نشان داد که آموزش مبتنی بر ژانر بر توانایی بحث نویسی پژوهشگران ایرانی علوم پزشکی تأثیر معناداری دارد. در نهایت، در یک مصاحبه گروهی متمرکز، شرکت کنندگان ادعا کردند که تخصص آنها در نوشتن به دلیل جلسات درمانی به طور قابل توجهی افزایش یافته است. پیامدهای این مطالعه ممکن است شامل آموزش ژانر محور در برنامه درسی ESP ایران باشد.

کلمات کلیدی: آموزش مبتنی بر ژانر، پژوهشگران پزشکی، توانایی بحث نویسی

Introduction

A mounting body of literature has focused on research articles in terms of their conformability to different genre-based frameworks across disciplines, and this research territory is known as genre analysis. A major line of genre analysis has been devoted to the verification of Swalesian genre theory in research articles in the form of corpus studies (Le & Harrington, 2016; Lim, 2012). Moreover, a good number of genre analysts examined the underlying research article's generic features and their linguistic embodiments in different fields under the title of move/step analysis (Cheng & Unsworth, 2016; Kanoksilpatham, 2015; Kwan, Chan, & Lam, 2012; Ruiying & Allison, 2003). Nearly all genre analysts offered implications for academic writing instruction in terms of genre-focused and rhetorical features of academic texts including proposals, theses, dissertations, and research articles. Fortunately, a huge attention has been allocated to proposal/thesis/dissertation writing in academic settings and graduate/postgraduate programs, as far as we know. However, discussion writing of research articles has received sparse attention in writing courses. This has led to a lack of explicit genre-based knowledge in graduate students as well as ESP researchers in terms of discussion crafting of research articles. Thus, in the present study, we tend to translate the growing body of literature on genre analysis into more practical and instructional purposes. We intend to familiarize medical researchers with the main part of genre literacy including research article moves/steps and their linguistic features in the discussion section. we also examine medical researchers' satisfaction with genre-based academic writing courses.

One important dimension of academic writing practice tends to be the development and publication of scholarly research articles (Lim & Luo, 2020). Scholars have acknowledged RA writing as a determining factor for academic knowledge promotion (Hyland, 2005). Some teachers as well as many graduate students face numerous challenges in their attempts to craft academic texts, which importantly holds true in the sphere of scholarly research article writing (Belcher, 2007; Casanave, 2002; Flowerdew, 2019; Flowerdew & Wang, 2016; Huang, 2010; Salager-Meyer, 2008). This is more visible when graduates become under pressure to write and publish research articles as either a part of course requirements or graduation criteria (Alinasab, Gholami, & Mohammadnia, 2021). The internationalization of English as the main language of scholarly publication has intensified academic writers' concerns in non-Anglophone countries where they need to not only fulfil academic obligations but also align with the English-medium writing and publication world (Giraldo, 2019; Mur Duenas, 2012). Linking academic writing to genre-focused aspects is a well-established story in the literature. This line of research has intensively focused on genre definitions and frameworks and provided insightful implications on the urgent need for *genre pedagogy* for academic writers (Phuong Dzung, 2008; Swales, 1990, 2004). Genre-based pedagogies deeply concentrate on the discoursal and rhetorical features of research articles and clearly and explicitly present them to students, teachers, and researchers (Cheng, 2011; Swales, 1990, 2004).

In the EAP/ESP tradition, there has been a substantial body of studies exploring academic writers' perspectives on their writing experiences. While there have been considerable attempts to help academic writers improve their papers linguistically (Blakeslee, 1997; Casanave, 2002; Molle & Prior 2008; Tardy, 2006; Asadifard & Koosha, 2013; Morton et al., 2015), This support line lacks a genre-based perspective. Despite the increasing knowledge and exploration of genre aspects in writing research papers, such a vast amount of valuable knowledge needs to be incorporated into teaching practice and analysis. Well-known strands in this regard include credible genre-based frameworks introduced by eminent scholars to provide move-based suggestions to researchers. It aims to familiarize students with the academic paper genre by providing the structure and rhetorical structure associated with each section of the research paper

(Phuong Dzung, 2008b; Swales, 1990, 2004). For example, the Creating A Research Space (CARS) model, proposed by Swales (1990, 2004), is one of the most popular genre-oriented frameworks to help researchers develop satisfying introductory sections. besides, a significant portion of the most authoritative journals in applied linguistics, such as *the Journal of English for Academic Purposes, English for Specific Purposes, Journal of Second Language Writing, and Written Communication*, devote themselves to genre-specific types of research papers.

Despite this excellent empirical coverage of the topic, there have been only a few attempts to explicitly implement genre-based pedagogies in the classroom. We have examined the properties of research articles descriptively and heuristically. Furthermore, translating this ever-growing knowledge into educational activities is fairly well-researched, mostly focused on dissertation/proposal writing and specific types of writing tasks such as mind maps in academic writing. (Wang, 2017; Wette, 2017). More importantly, though not necessarily genre-oriented, there are numerous research paper writing guides available for both novice and inexperienced writers. However, when it comes to genre-based elements, there have been few attempts to develop and directly implement accessible and enriching academic writing materials in curriculum and syllabus design, especially discussion writing of research papers.

A genre-based perspective is missing in this line of support. Despite the growing knowledge and exploration of genre aspects of research article writing, such a huge body of valuable knowledge needs to be put into pedagogical practices and analysis. A well-known strand in this respect includes credible genre-based frameworks introduced by prominent scholars to offer move-based suggestions to researchers. This is to familiarize them with the genre of scholarly writing through providing relevant organizations and rhetorical structures for each section of a research article (Phuong Dzung, 2008b; Swales, 1990, 2004). For instance, the Creating a Research Space (CARS) model, suggested by Swales (1990, 2004), is one of the most well-known genre-oriented frameworks to help researchers develop a satisfactory introduction section. In addition, a significant share of the most credible journals in Applied Linguistics such as *Journal of English for Academic Purposes*, *English for Specific Purposes*, *Journal of Second Language Writing*, and *Written Communication* among others has been devoted to the coverage of genre-specific features of research articles.

Despite this outstanding empirical coverage of the topic, there have been very few attempts to explicitly implement the pedagogy of genre literature in instructional settings. Most studies have descriptively and heuristically delved into the nature of research articles to verify the previously mentioned genre-based frameworks. In addition, the translation of this growing body of knowledge into pedagogical activities is fairly well-researched with foci being mainly on thesis/proposal writing and particular types of writing tasks such as mind maps in academic writing (Wang, 2017; Wette, 2017). More importantly, though not necessarily genre-oriented, numerous manuals on how to write research papers are available for novice and less experienced writers. Yet, in terms of genre-based elements, there are hardly any attempts to develop and directly implement accessible and thorough instructional academic writing materials in curriculum and syllabus design, particularly in the case of discussion writing of research articles. Thus, the research questions addressed in this study are:

RQ1: Does genre-based instruction have a significant effect on the discussion writing ability of Iranian researchers of medical sciences?

RQ2: What attitudes do Iranian researchers of medical sciences hold toward genre-based discussion writing instruction?

Literature Review

The significant role of genre in education has been well acknowledged in the literature. Tardy (2019), for instance, has noted that the concept of genre must be considered in literacy-based

educational programs. The application of genre for pedagogical purposes is generally known as GBI. Many believe that GBI is simply the translation of the results of GA in pedagogy, which is not a straightforward definition. Perhaps, the most comprehensive definition of GBI was provided by Wette (2017) as follows:

…how core academic genres such as essays and research reports are structured, or about appropriate language choices beyond the need for accurate grammar and vocabulary. A Top-down or synthetic processing would assist students to grasp the macro-structure of a text and its various dimensions more easily and achieve a global understanding of its main ideas (p. 58).

An earlier interpretation was provided by Johns (2008), who noted that GBI involves the explicit instruction of rhetorical moves and steps of particular genres and their relevant linguistic features in writing programs with the aim of promoting students' genre/rhetorical awareness. In fact, GP is a top-down approach to teaching writing and highlights the macro structures of texts and other related aspects (Tardy, 2009). Therefore, numerous scholars have underscored the importance of GBI in promoting students' and writers' knowledge of specific genres in order to better deal with requirements and challenges (Dong & Lu, 2020; Hyland, 2003, 2007; Paltridge, 2014; Swales, 2004).

The present study implemented an ESP-based genre literacy due to its significance echoed in the literature. In the ESP tradition, explicit pedagogical processes are encouraged, which is mainly accomplished through analysis of formal schematic features and reconstruction tasks to capture macro features of texts (including move/step dimensions) (Hyland, 2008). Negretti and McGrath (2018) referred to the frequent use of analysis tasks in ESP genre education that involves the practitioners in analysing and identifying the macrostructures of RAs predefined by researchers in the field. In addition, as a secondary objective, ESP genre pedagogy focuses on the relationship between the textual features and their bigger rhetorical moves and how they follow a common communicative purpose. In other words, how a text is associated with readers, writers, and micro/macro settings (Cheng, 2006; Hyland, 2004; Tardy, 2009). The principal objective behind ESP approaches is to promote *rhetorical awareness* (Swales, 1990, p. 213) or genre knowledge of L2 writers.

Most studies on genre pedagogy of academic writing adopted a dual approach to teaching L2 writing including different genres, dominantly theses/dissertations and research articles. A pioneering study was conducted by Lee and Swales (2006) who designed and executed a corpus-based academic writing course. In this study, four Ph.D. students were considered as the targets. During the course, students were exposed to a specialized corpus in their own disciplines and were encouraged to notice the linguistic features of the papers. At the end of the study, students showed their satisfaction with the genre-based course, particularly the part that introduced disciplinary corpora.

Cortes (2014) opted for a genre-based teaching of academic writing based on expert corpora. To implement the course, the researcher selected two groups of experimental and control. In the treatment group, students were introduced to moves of RA sections and linguistic aspects and analysed their self-selected corpora, which included a larger number of RAs, to check more samples. On the other hand, control participants received the same GBI, but analysed only four RAs as further samples. As a result, experimental students expressed higher satisfaction with the course.

Flowerdew (2015) developed a single-session workshop on writing the discussion section of theses. The session lasted for 5 hours and highlighted the basic rhetorical features of the discussion part. Then, students analysed expert corpora to note the lexio-grammatical features of the rhetorical function introduced earlier. This was done through a diverse number of hands-on corpus-based activity. Based on the findings, this type of activities helped students to transfer

their receptive knowledge to productive knowledge. Besides, this discovery learning approach to teaching L2 writing improved non-native students' incomplete grammar knowledge.

In Chen and Flowerdew's (2018) study, more than 400 PhD students from different disciplines took part in a corpus-based L2 writing workshop. The course included a large number of teaching activities on RAs based on the relevant literature. During the workshop, different corpora series were shown to students to familiarize them with genre-specific features of RA including rhetorical organization and linguistic patterns. According to the findings, the genre-based course enhanced students' contextual understanding of academic writing. The participants also showed a high appreciation of the course in the interview sessions.

In a similar study, Negretti and McGrath (2018) developed and implemented a partially genre-directed course for English doctoral students. The researcher aimed to know whether metacognition serves a role in scaffolding students' genre knowledge in academic writing. They prepared two types of tasks. In the first task, students were asked to define genre and their writing context, and different genre analysis tasks were used in this phase. In the second part, participants interpreted the concept of genre in their specific scientific communities through visual representations. The results showed that genre-based courses based on metacognitive activities led to students' use of genre knowledge and visualization in their own subsequent writing practices, in this case, RAs. The researchers reached the conclusion that metacognition has an important role in better-integrating students' genre knowledge into writing practices.

In a case study, Giraldo (2019) probed the problems and gains in genre-based academic writing courses. Questionnaires, interviews, and journals were used to collect data regarding the practices and challenges based on students' perceptions. The findings revealed the effectiveness of GBI, which is a holistic top-down orientation toward academic writing instruction, led to improvements in student writing. According to students' attitudes, the main obstacles in genre-based courses included time, disciplinary variations, and proficiency level. Interestingly, students hold positive perceptions of English as the language for scholarly writing. Besides, they preferred academic writing practices on rhetorical structures of texts to better write in English. Totally, this study supported the use of GBI in academic writing programs.

Chang and Kuo (2011) intended to assess the efficiency of corpus use in teaching academic writing. To this end, they used genre-analysis techniques to design an online material package for RAs. Based on their analysis of disciplinary corpora, a common core of vocabulary items, moves, and grammatical features were identified. In addition to textual and generic features, they prepared interactive activities, discussion prompts, and writing samples. This material pack was thoroughly data-driven and research-informed. The researchers concluded that corpus- and genre-based approaches to teaching of academic writing should be adequately flexible in order to account for recent disciplinary variations. They also reported that corpus use in advanced writing material preparation and instruction tends to be often effective, which is drawn from qualified research papers published in international journals.

In order to examine and compare the effectiveness of Academic Literacies and genre-based approaches to academic writing instruction, Wingate (2012) introduced two initiatives based on both approaches. The first was a discipline-specific online writing program that focused on generic structures of academic texts and was doable across disciplines. In this program, students were encouraged to enhance their critical awareness of the disciplinary conventions in line with tenets of Academic Literacies. The second was entitled as the embedded writing support and included five teaching methods in Applied Linguistics writing instruction. The tutors were supposed to teach subject matters drawing insights from genre features. The researcher found that the Academic Literacies approach was not easily applicable due to its ties with power relations, and students did not show interest in this type of instruction. On the other hand, they found GBI useful, which drew insights from discipline-specific texts. In conclusion, the study suggested that

GBI can serve as the basis for students' academic writing improvements, and then they may enhance their critical genre awareness if the basis is properly built.

In a case study, Cheng (2008) aimed to scrutinize an L2 graduate student's (majoring in Electrical Engineering) learning process in an ESP genre-based writing program. A rather different genre-focused approach was used, and the student was asked to analyse genre exemplars in academic texts to prepare for future writing practices. This was a self-discovery practice. According to the results, student analysis included genre aspects at discourse levels, which was accomplished through two ways: 1) Rhetorical (including functions and underlying practices such as audience and purpose) and 2) Evaluative. Similar to previous studies, the researcher reported genre as a powerful tool to enhance academic literacy among graduate students. He also noted that the findings can be generalized and tested across disciplines to enhance the knowledge horizons of genre and how it affects writing pedagogy at advanced levels.

In GBI research, Cheng (2011) conducted a different study and introduced language features as an important dimension of genre and authors' awareness of it. He examined how international graduate students comprehend the link between context and text within an ESP genre-based academic writing course. It was found that rhetorical aspects are important and provide the basis for students' awareness of genre. However, students mainly used linguistic devices to make sense of contextual dimensions of academic writing. Besides, this linguistic awareness as the major pathway to their understanding of rhetorical and disciplinary conventions. This finding was in sharp contrast with previous studies that foregrounded rhetorical function as the leading factor. The researcher concluded that genre theories are becoming complex, and thus more studies are warranted to establish the role of genre in academic writing instruction.

Based on the results of genre analysis, Rau (2021) aimed to help engineering students understand and properly craft prototypical features of RAs such as moves and linguistic features. In fact, he proposed a research-based curriculum for writing programs in EFL contexts. Three main approaches were used as the basis for material development: 1) Genre analysis (related to rhetorical organizations and lexical bundles), 2) Argumentation theory (the strength of support and evidence provided by authors), and 3) Component analysis (how students capture the purpose of each paragraph instead of moves). The researcher concluded that students made sense of RA structure as a result of the materials, and component analysis served as a building block for variations across RAs from different fields.

In line with the tenets of genre-based pedagogy, Mizumoto et al. (2017) developed an online practical support for RA writing based on theory and corpora. The support package included moves/steps and lexical bundles for RA sections, and the basis was the concept of move-bundle connection. According to the findings, the online support for RA writing was effective, and the results were comparable to genre-based writing pedagogy in real classes. The researchers in this study advocated the teaching and learning of advanced writing based on technology and genre. Their material pack combined bottom-up (lexical bundles) and top-down (moves and steps) approaches and led to students' awareness of genre-based disciplinary conventions.

Li et al. (2018), in a case study, examined an ERPP course for science students in China. In this study, the material pack drew insights from discourse analysis and the Swalesian tradition of move/step structures. The participant was an experienced EAP teacher in the university. The rhetorical move/step and corpus-based approaches were applied by the instructor, and the teaching strategies used in the course were analysed. The researcher concluded that more meaningful pedagogical attempts are required to improve the status quo of the ERPP course. In fact, the implementation of genre-based ERPP courses is still under-presented in academic writing research.

Li et al. (2020) conducted a study entitled "graduate-level research writing instruction: two Chinese EAP teachers localized ESP genre-based pedagogy". The researchers aimed to inspect how EAP instructors teach ERPP to graduate students and demonstrate the link between language and context in writing research papers. In conclusions, they reported that teachers with adequate genre knowledge and publication experience run the course more confidently and completely. The results of this study could be used to show the efficacy of GBI and within-class practices of teachers for preparing more meaningful pedagogical practices and initiatives in advanced L2 writing pedagogy.

Flowerdew (2015) held a two-folded workshop on the discussion section of theses at postgraduate levels. The target participants were majoring in science and engineering fields. The researcher designed and implemented concordance activities through receiving insights from RA-based corpora. The first part of the workshop required students to conduct a self-analysis of sample discussions to make sense of move/step patterns, which was a top-down orientation. Then, in the bottom-up activities, students were encouraged to link the identified rhetorical move/step patterns to lexico-grammatical features. In the second part, the focus was on the flexibility of rhetorical functions in the discussion sections. The tasks were crafted based on students' concerns in writing discussions. At the end of the study, the researcher provided a free corpus and material pack for discussions authored by advanced writers. As the results showed, students felt positive with regard to the online writing program.

Dong and Lu (2020) put forward a hybrid approach consisting of genre- and corpus-based approaches in an EFL context. They aimed to enhance engineering students' genre-based competence in RA writing. Firstly, students and instructors compiled and analysed a select number of RAs leading to a list of rhetorical moves. Then, based on a corpus approach, rhetorical moves and linguistic devices were identified. In order to evaluate the efficiency of the course, the researchers used questionnaires, reflective journals, and students' writing samples. Based on the findings, participants' genre knowledge improved, and writing based on genre featured showed significant advances. As an important implication, GBI was recommended to teach disciplinary RA writing in non-Anglophone settings.

In a different study, Wang (2017) examined learners' reactions toward GBI-based pedagogical activities in EAP thesis writing classes. He believed that learner features may help practitioners to design better genre-focused activities in writing courses. This was done through student logs and writing samples, and two main learner characteristics were reported. The first was self-direction that involved learners in general EAP tasks mediated by instructors. The second was labelled as positioning that was related to general assignments of thesis writing. These two features were found to be in sharp contrast with course objectives in terms of genre-based awareness and pedagogical tasks. In conclusion, important implications were suggested for preparing more proportionate writing programs to learner-related aspects.

Wette (2017) investigated genre-based advanced writing courses at graduate levels to examine how particular writing tasks, namely mind maps, mediate the genre knowledge of book reviews and literature reviews. In the course, 47 students were attending. The mind maps of pre--and post-tests were compared. It was found that textual, rhetorical, and process versions of genre knowledge were promoted as a result of GBI. Besides, students' comments showed that mind maps were helpful in developing genre awareness and rhetorical aspects, which in turn led to motivation and self-efficacy in academic writing. Mind maps can be also effective to design writing courses leading to advances in terms of all types of genre knowledge.

Based on genre analysis literature, a large number of studies have highlighted the organizational, rhetorical, and linguistic aspects of research article sections. This line of research has intensively focused on move/step features and their linguistic realizations relying on the

Swalesian and SFL traditions. The outcome of this growing body of research is the insightful implications and suggestions for research article writing instruction and material development.

Method

This study was conducted in two Iranian Universities of Medical Sciences. As is the case in the rest of the world, published papers are considered a plus point for promotion. Thus, medical researchers as well as researchers in nonmedical universities need to author publishable papers in order to meet the requirements of university promotion and admission to a higher program quite in line with the universal trend of 'publish and flourish' (Gray, Madson, & Jackson, 2018).

According to the researcher's own previous experience of academic writing courses as well as a document analysis of many advanced writing syllabi, it is assumed that paper writing, particularly genre-based writing, has no room in academic writing classes where should be the main places helping students in their ways to their academic requirements such as scholarly publishing and future career opportunities.

Given this context of our study and in line with Tardy (2009) who underscored the need for developing a working mastery of genre literacy, particularly formal type of genre knowledge including the rhetoric and move features of RAs in order to craft scholarly written manuscripts, we decided to run a *Genre-based Discussion Writing Program* for a group of highly motivated medical researchers.

Participants

The participating authors in this study included a pool of medical researchers (N=35) from Tehran and Zanjan Universities of Medical Sciences. The participants expressed their interest in participating in this optional program with the incentive of improving their discussion writing potentials and the publishability of their papers. According to the national syllabi and course description provided by the Council for Higher Education in Iran (2016), in the academic writing course named *Writing Academic Texts*, how to craft scholarly written RAs is not stated among the course objectives. Besides, according to the author's experience and the review of the course syllabi of a number of universities offering this course in Iran and the participating authors' experiences, such courses heavily focus on non-genre features of proposal/thesis writing, namely topic selection, formation of research questions, design and procedure, APA style, citation, and paragraph development such as coherence and cohesion. In these courses, there is little room for the coverage of genre-oriented aspects of RA writing and more specifically discussion writing and their specific linguistic embodiments. This particular lack of genre-based attention to discussion organization in academic writing classes acted as an impetus for medical researchers to express their interest in joining our genre-based program.

The target population were roughly at an advanced level in terms of their general English proficiency. The pivotal screening factor was the completion and crafting of one project, and, more importantly, the willingness to refine it further for possible publication purposes. Moreover, the participants were briefed that the course was solely to concentrate on integrating the existing body of the genre-based literature into discussion writing, and those who expressed their interest in taking such a course on a voluntary basis were invited to enroll in it. Based on these criteria, we set out the course for 35 medical researchers. This group of participants were also interviewed for their perception on the GBI-based discussion writing course.

Design

This study adheres to a mixed methods research design via examining the phenomenon under question both quantitatively and qualitatively. The first research question was explored

quantitatively via implementing a within-group pre-test/post-test design to investigate the participants' discussion writing ability at different points of time, namely pre-tests and post-tests, in order to ensure possible improvements.

At the very end of the program, the participants took part in a semi-structured interview with the purpose of capturing their attitudes and satisfaction with genre-oriented writing courses. A focus group interview was employed to this end.

Instruments
Focus-group interviews: Attitudes
In this phase, the researcher delved into the attitudes of medical researchers toward the GBI-based discussion writing course. To this end, ten participants voluntarily took part in our focus-group sessions to discuss around the features of the course. The researcher acted as the facilitator to keep the discussion as specific as possible (Mackey & Gass, 2021). The stimulus for the session included several questions on the features, tasks, and procedures of the course, and how the participants perceived GBI. The questions targeted the concept of genre, genre-based frameworks, moves/steps of the discussion section, and linguistic features of the discussion section. The session was held in English, was recorded, and lasted about an hour. It should be noted that the prompt questions were already checked by two academic writing instructors to ensure content validity, and they agreed upon the themes included in the questions.

Pre-test and posttest
This study used earlier and revised drafts of unpublished papers formatted in the form of a typical RA to examine the effectiveness of GBI and students' genre-based revisions on the discussion section as a result of the treatment. The earlier drafts were already crafted. Following their participation in the genre-based discussion writing program, they were asked to revise their papers.

The RAs were scored based on a genre-adherence scoring model for RA sections that was developed by Alinasab, Gholami, and Mohmmadnia (2021). The rubric is described in the procedure.

Procedures and data coding
At this stage, we developed genre-based course materials to hold a workshop on discussion writing. To set up this course, the researcher conducted an in-depth review of the literature on genre-based studies in Applied Linguistics and ESP, and accordingly developed pedagogical genre-specific discussion writing materials and activities which proceeded from knowledge transmission and awareness-raising to guided activities and tasks on genre-based features of discussion writing as envisaged by McGrath (2015).

Thus, the discussion sections of RAs within the Introduction-Method-Results, and Discussion (IMRD) structure (Swales, 1990) were dealt with. Totally, with reference to the difficulty level, length, range, and scope of the pedagogical class- and home-based activities tailored for the discussion section, we allocated four sessions for the discussion section.

the participants were then exposed to genre-specific features of discussion writing (e.g., moves and steps for the discussion section of RAs and the relevant lexical bundles to realize those moves) in medical sciences which were extracted and tailored consulting prominent frameworks in the field of genre analysis.

The content of each session included genre-specific knowledge of move/step features of the section together with its relevant lexical bundles, which was transmitted to participants through a number of handouts and tasks. The handouts included the genre-oriented frameworks and their linguistic features, and the tasks consisted of both recognition (e.g., *labeling* or *ordering the*

moves or steps) and production (e.g., *writing the missing moves or steps*) tasks as the realizations and practices of the handouts. Ultimately, we asked the participants to revise the discussion section of the earlier drafts of their papers. Then, we compared the two versions of the section to spot the differences.

To explore the effectiveness of the genre-based discussion writing course, the researcher aimed to compare the participants' pre-written and revised discussion section of RA formatted papers before and after their participation in our course. To do so, the discussion section of RAs was scored based on a genre-adherence scoring index developed by Alinasab, Gholami, and Mohmmadnia (2021). Within this index, the total score for the discussion section was 5. The index is presented in Table 1.

Table 1
*Three-pronged Genre Adherence Scoring Rubric for RAs*

Prong	Outcome	1 (Rarely) (Always)	2 (Occasionally)	3 (Often)	4	5 (Generally)
Obligation	The writer appropriately uses obligatory moves/steps together with respective lexical bundles and linguistic embodiments in terms of accuracy and range					
Optionality	The writer appropriately uses optional moves/steps together with respective lexical bundles and linguistic embodiments in terms of accuracy and range					
Sequencing	The writer adequately observes the correct ordering for obligatory and optional moves/steps					

One week after the course, the researcher invited several participants to take part in a focus-group interview. The aim was to examine their perceptions on the course. To facilitate the session, a set of questions was prepared in advance with regard to the features of the genre-based discussion writing course and participants' experiences throughout the workshop. The content appropriacy of the questions were checked through expert validation, and the three researchers together with an experienced academic writing instructor agreed up on the questions. The interview session was recorded and lasted an hour. Then, the responses were transcribed and prepared for qualitative content analysis.

Results
Genre-based discussion writing course: Quantitative accounts
In this part, the results related to the effects of GBI on participants' discussion writing abilities are elucidated. we present the results of paired t-tests used to compare the original and revised discussions written by the participants. It should be noted that all assumptions for the t-test were satisfied. A sample normality check is illustrated in Figure 1.

Figure 1
Sample normality check for the production tests

Mean = 3.47
Std. Dev. = .834
N = 15
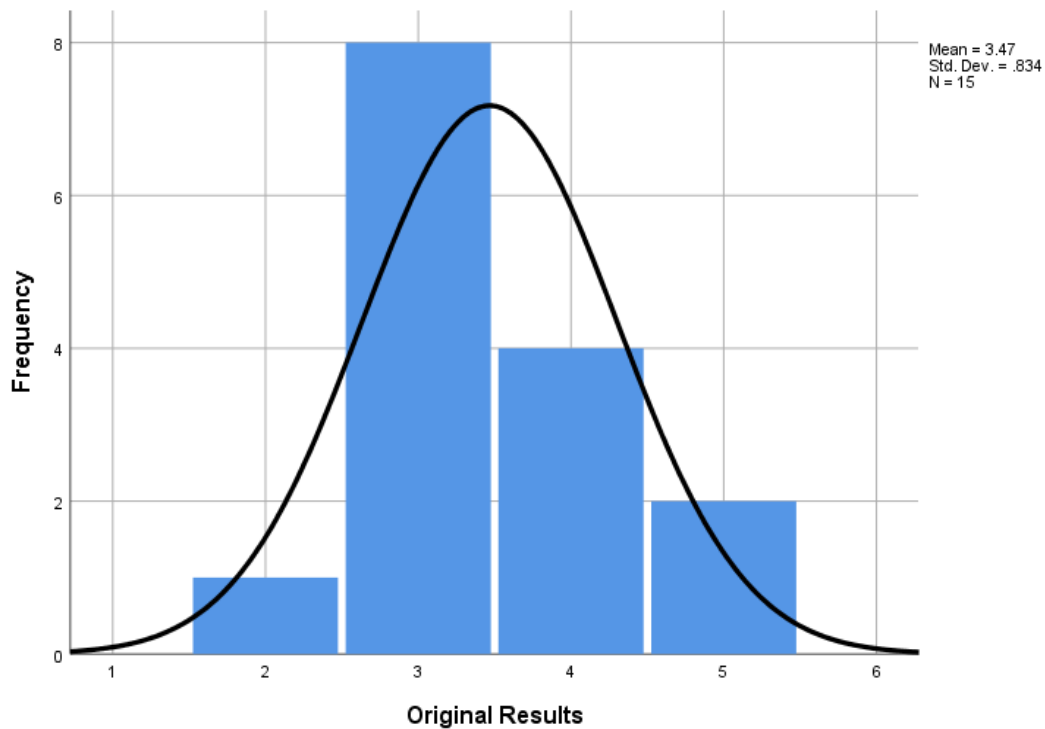
Table 2
Descriptive of the original and revised discussions

	Mean	N	Std. Deviation	Std. Error Mean
Original Discussions	1.73	35	.594	.153
Revised Discussions	4.07	35	.704	.182

Table 3
Paired t-test results of the original and revised discussions

Paired Samples Test								
		Paired Differences				t	df	**Sig. (2-tailed)**
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Original Discussions - Revised Discussions	-2.333	.488	.126	-2.604	-2.063	-18.520	14	.000

According to Table 2, the mean score in the post-tests is larger compared to that of the pre-test. Additionally, based on Table 3, the p-value is less than .05 and suggests a significant difference between original and revised discussions. Thus, in regard to writing discussion, participants improved significantly after the GBI workshop with regard to the moves and steps and their linguistic features.

participants' perceptions on the genre-based discussion writing course: Qualitative results
The other objective of the present study involved participants' perceptions toward the genre orientation in academic writing classes, particularly in terms of discussion writing practices. As noted, we used focus-group discussions to extract their perceptions.

The participants generally held positive perception toward the course and its objectives. Interestingly, they found the genre-based frameworks helpful, which made to enhance their horizons with regard to scholarly writing and publication. They found the genre-based materials and tasks for discussion writing helpful. Mainly, they associated this usefulness to the practicality of the tasks, which required them to write and practice move by move and then build the whole discussion. Generally, based on the participants' perceptions, we conclude that our GBI-based course for discussion writing was successful in helping medical researchers become closer to their academic requirements and goals.

Discussion

The main purpose of the present study was to develop and implement genre-based discussion writing materials and courses. As we found in the first phase of the study, GBI is lacking in Iranian academic writing courses, especially for research article writing. Thus, we designed the GBI-based course and invited medical researchers to participate in a series of discussion writing workshops. The findings showed that the participants' discussion writing abilities significantly improved as a result of the GBI as we compared original and revised discussions. The improvements were found in the use of macro features such as moves/steps and their linguistic embodiments and lexical bundles. In addition, it was noted that the participants' declarative knowledge in terms of the discussion section genre features improved, and they could truly identify factual information about discussion section and the respective moves/steps. The results of the study are in line with previous findings (Johns, 2003; Hyland, 2007; Martin & Rose, 2008; Martin,2009; Kuhi, 2014; Rezvani & Saeidi,2019; Alavi et. al.,2021) who supported the effectiveness and merits of genre-based approach on learners' written performance. In terms of attitudes toward the GBI-based discussion writing course, the participants welcomed discussion genre literacy as a component in an academic writing course. We should note that our study suggests an innovation in ERPP courses, and the effectiveness of GBI has already been highlighted in the literature.

The literature on the development and implementation of GBI in academic writing course is not very rich. For example, our findings accord with those of Chen and Flowerdew (2018) who reported the effectiveness of GBI and graduate students' positive perspectives on the GBI constituting RA discourse features and linguistic realizations. Similarly, in our study, participants were open to this approach as well as genre-based hands-on activities. In addition, our findings in terms of the effectiveness of GBI echo those of Dong and Lu (2020), noting the desirable roles of genre-based pedagogies in promoting genre knowledge and academic writing potentials in EFL contexts and for engineering students. Similarly, partially in line with our results, Cargill et al. (2012) observed that master's students appreciated the use of specialized corpus directly related to content in writing classes. As we suggest in this study, students need to be exposed to RA genre aspects in their own disciplines (Dong & Lu, 2020).

We ascribe the effectiveness of GBI to the hybrid approach used to teach discussion writing. In this study, we adhered to both deductive and inductive approaches to help participants enhance their writing. Indeed, the hands-on activities we used to encourage inductive learning may have contributed to the participants' genre awareness. In simpler terms, hands-on tasks may have helped them consolidate their knowledge of genre-based frameworks, which promoted their awareness of academic discourse features (Braine, 1995). As the participants noted in the post-

GBI interview, introducing rhetorical moves and linguistic realizations together with subsequent activities seemed very helpful and even boosted their confidence.

Conclusion and Pedagogical implications

In this study, we found slight systematic connections between research and pedagogy of academic writing, which leads to the lack of robust materials packages, particularly genre-based, in the realm of RA writing. To address these issues, we consequently implemented our GBI course on discussion writing and noticed significant improvements in participants' discussion writing abilities. It should be noted that our course was an innovation in academic writing research, and has already highlighted the importance of GBI.

Our findings can provide insights for academic writing instructors and materials developers at graduate levels. Academic writing instructors could widen their understanding of advanced writing concerns and teach accordingly. By extension, it would be a good idea to incorporate RA writing practices into academic writing and English for Research Publication Purposes (ERPP) classes and equip academicians with RA genre literacy including moves/steps features, rhetorical organization, and linguistic realizations. As noted by Flowerdew and Wang (2016), academic writing courses could be the best platforms to focus on the interplay of factors, including genre. This type of change in academic writing classes would require more cooperation between instructors and materials designers. The latter may devote extended time to go through the recent research on RA writing literacy and devise the materials that properly address academicians' needs. Having done this, materials designers could mediate the link between research and practice (Lea, 2004; Lillis, 2003) and contribute to needs-based academic writing instruction, more notably discussion writing and possibly publication that is a universal notion in the academic and professional success of academicians.

Throughout the GBI-based course implementation, our participants were highly motivated to promote their discipline-specific literacy and scholarly writing and publication. Besides, they were all advanced English users due to their field of study, and the course was designed based on advanced specific knowledge of the discussion genre. These facts about the participants may have affected our significant results in terms of discussion writing improvements and their appreciation of the course. Considering these factors, future researchers could design and execute genre-based RA courses for students majoring in other fields with lower or intermediate proficiencies and even motivation. In addition, to examine students' perspectives on the GBI, we used focus-group discussions with a small number of participants due to participant accessibility issues. Further research is recommended to conduct attitude-based surveys in terms of participants' genre literacy on the discussion section of research articles using more sophisticated tools such as interviews and questionnaires. Finally, applying genre-based instruction on the other sections of research articles in different other fields of study is our ultimate recommendation for future studies.

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