



A Model of Authors' Generic Competence of EAP Research Articles: A Qualitative Meta-Synthesis Approach

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Abstract

Genre analysis as an area of great concern in recent decades, involves the observation of linguistic features used by a determined discourse community. The research article (RA) is one of the most widely researched genres in academic writing which is realized through some rhetorical moves and discursive steps to achieve a communicative purpose. This study aimed at proposing a model of generic patterns competence applicable in writing RAs in different English for Academic Purposes (EAP) disciplines. In so doing, a "qualitative meta-synthesis" (Walsh & Downe, 2005) approach was adopted as the research method. A meta-synthesis exercise was framed and the currently available literature on various models of generic moves suggested for the different sections of RAs was investigated. 391 relevant abstracts and 354 full papers were selected and screened and a number of 26 studies were appraised for final inclusion. Afterwards, a reciprocal translation was conducted to generate the latent themes and concepts in the general model. More specifically, a thematic coding strategy was applied for synthesizing the selected qualitative evidence. Then, different obtained themes and categories were synthesized to extract the major dimensions of the model of RA generic competence. Finally, four super themes of generic competences were emerged including: RA abstract generic competence, RA introduction generic competence, RA methodology generic competence, and RA discussion generic competence. The new model can be a common frame of reference to guide the EAP researchers in understanding and following the appropriate generic structures in producing an acceptable body of academic discourse to be published in highly prestigious journals.

Keywords: Genre Analysis, Research Article, RA Generic Competence, EAP, Meta-Synthesis

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Introduction

Genre is defined as a communicative event motivated by a communicative purpose in a discourse community (Bhatia, 2004; Flowerdew & Wan, 2010; Swales, 2004). Genres have been examined in terms of the two plains of lexico-grammatical features and schematic units or structural moves (Hyon, 1996). A move has also been defined as a bounded communicative act and a functional category designed to achieve a communicative goal (Swales & Feak, 2004) that relates to a writer's purpose and to the extent of his/her desire to communicate (Dudley-Evans & St John, 1998). Each rhetorical move can be actualized through smaller steps (Swales, 1990) or strategies (Bhatia, 1994). These moves and steps can be either optional or obligatory.

Academic writing has been playing a significant role in discourse communities with academic functions. This position of great primacy has enabled written academic discourse to be explored from various aspects. The RA is one of the most widely researched genres in academic writing. Samraj (2002) points out the importance of research writing across disciplines in terms of gaining membership to specific discourse communities. Swales and Feak (2009) have considered an RA as a genre and its components as part-genres. Thomas and Hawes (1994) have said that RA is identified by "a recognizable communicative purpose and by the presence of characteristic features with standardized form, function, and presentation that are part of its general conventions" (p. 131). Effective RA writing ability is not only based on linguistic competence, but also on understanding of the rhetorical structures used in different sections of a RA as appreciated by the discourse community. A review of different sub-genres of the RA, including abstract, introduction, methodology, results and discussions, and conclusions is presented as follows.

Literature review

The abstract, as a significant sub-genre of the RA, is a general overview of a scientific work and an outline guiding the readers through the text. The study of this section abounds in linguistic literature (Ren & Li, 2011), and it has been examined with respect to a wide coverage of topics (e.g., Babapour & Kuhi, 2018; Bhatia, 1993; Hyland, 2000; Ju, 2004; Lorés, 2004; Santos, 1996; Tahririan & Jalilifar, 2004). The abstract has attracted an increasing attention since it "constitutes the gateway that leads readers to take up an article, journals to select contributions, or organizers of conferences to accept or reject papers" (Lores, 2004, p. 281). Rhetorical move analysis of the abstract section has been considered by some researchers (e.g., Hyland, 2000; Samraj, 2002, 2005; Lim, 2006; Lorés, 2004; Phanthama, 2000; Pho, 2008; Promsin, 2006; Santos, 1996; Yang & Allison, 2003). Yet, it has been found that the exact structural moves were not followed in a

considerable number of academic journals (e.g., Anderson & Maclean, 1997; Lau, 2004; Cross & Oppenheim, 2006; Pho, 2008; Santos, 1996).

Introduction is another sub-genre of a research article. It is defined as a "crafted rhetorical artefact" and a "manifestation of rhetorical maneuver" (Swales, 1990, p. 155). This part involves gap statements which emphasize a convincing niche through foregrounding "elaborated criticisms or denials of previous knowledge claims" (Lindeberg, 1994, p. 138). The function of this section is thus to create a research space, state the relevance and purpose of the study, contextualize it in the literature and claim its novelty. Within the studies examining the organizational patterns of RAs, the major focus of interest has been on the introduction section of RAs. A plethora of studies have examined the introduction section of research articles (e.g., Bhatia, 1993, 1997; Swales & Najjar, 1987; Swales, 1981, 1983, 1984, 1990; Ahmad, 1997; Hyland, 2000; Jogthong, 2001; Samraj, 2002, 2005; Shehzad, 2006, 2012; Ozturk, 2007; Khani & Tazik, 2010).

The method section is the most straightforward part of the RA, but it has gained the least attention from genre analysts. This section provides information on design, procedures, assumptions, approach, data, and experiments taken to obtain the study findings. It has the function of describing sampling, data collection and analysis procedures, and asserting their credibility. This section constitutes the key section in research papers because it serves to convince the readers on the validity of the procedures employed in the study (Lim, 2006). Moreover, Berkenttor and Huckin (1995) assert that the method section is an interesting section in which the writers need to ensure that explanations are presented in a way that make the study stages adequately replicable. Despite the high importance of the method section, compared with other sections of an RA, there has not been much studies on this section in previous research. Also, there is no clear model for the methodology section which can be applied for all EAP disciplines. However, some studies have conducted detailed move analyses on the method section in different EAP fields (e.g., Brett, 1994; Nwogu, 1997; Kanoksilapatham, 2005; Harwood, 2005; Lim, 2006; Bruce, 2008; Peacock, 2011).

The results section functions to describe data in an understandable and unbiased manner. However, the function of the discussion section is to interpret and contextualize the research, and assert its value. The rhetorical structure of results and discussion section has been the area of interest for several researchers in various EAP disciplines (e.g., Brett, 1994; Dudley-Evans, 1994; Holmes, 1997; Biria & Tahririan, 1997; Posteguillo, 1999; Salahpour & Afsari, 2017; Williams, 1999; Peacock, 2002; Ruiying & Allison, 2003; Yang and Allison, 2003; Fallahi & Erzi, 2003; Fallah, 2004; Amirian, Kassaian, & Tavakoli, 2008; Lim, 2010; Basturkmen, 2012; Amnuai & Wannaruk, 2013).

In the discussion section, the authors need to utter claims about how their findings contribute to the disciplinary knowledge (Basturkmen, 2012). As Weissberg and Buker (1990) stated, when the author writes the discussion section, he/she steps back at the findings as a whole and tries to move the readers from the information presented in the results section to a general interpretation of those findings. Discussion section has been widely recognized as difficult to write for both native and non-native speakers (e.g., Flowerdew, 1999, 2001; Jaroongkhongdach, Todd, & Hall, 2012; Swales, 1990; Swales & Feak, 2004). This might be because writers need to meet the cognitive demands of the discussions and have skills for writing in the persuasive and argumentative styles (Pojanapunya & Todd, 2011).

Lastly, the conclusion section of RAs has the function of summing up the obtained findings, evaluating the overall study in terms of limitations, the contributions, and the methodology. This section has been the concern of a few recent studies (e.g., Yang & Allison, 2003; Bunton, 2005; Morit, Meurer, & Dellagnelo, 2008; Aslam & Mehmood, 2014). Less focus has been centered on the conclusion section of the RAs because this part usually seems to be a sub-component of the discussion section. However, the boundary between the two sections is distinct in terms of their communicative function. This distinction has been highlighted by Weissberg and Buker (1990). They have commented that the Discussion section is concerned with the interpretation of the results, while the Conclusion section highlights the value of such findings and explains their contribution to the research field.

EAP researchers' lack of RA generic competence

EAP programs focus on the skills required for a learner to perform well in an English speaking academic context across some particular subject areas. Writing, as an important means of communication, imposes great challenge for novice EAP researchers. This difficulty is enhanced when EAP students write in English, as they not only have to gain the disciplinary discourse but also acquire the rhetorical conventions different from those of their first language. Thus, developing academic writing abilities needs to be a remarkable goal in EAP programs.

The value and importance of writing and publishing an RA in a scholarly journal while or after the completion of an EAP program have been added to the significance of developing EAP writing skills. Besides, among some possible factors in the rejection of good papers in prestigious journals, the awareness of RA generic structure has been widely addressed (e.g., Yakhontova, 1997; Ahmad, 1997; Tahirian & Jalilifar, 2004). Accordingly, constructing a presentable RA for publication requires not only the knowledge of the language use, but also the rhetorical organization of the texts (Amnuai & Wannaruk, 2013). This awareness is

referred to as the discourse competency and constitutes the knowledge of various moves and steps of the rhetorical structures of different RAs sections.

Thus, in order to share research findings with the academic community and gain international recognition, a researcher should acquire the discourse competency regarding text features and structures. Furthermore, this competence is a prerequisite for their entry into the academic discourse community if they decide to pursue scholarship beyond an undergraduate education (Flowerdew, 2000). Therefore, this study can be of significance to EAP researchers who study English in different academic fields of study and may find difficulty following different steps in writing different RA sections.

Lack of a reductive model of generic structure in academic RA writing

The review of existing models of RA moves and steps reveals that despite much previous attention to these models, no attempt has been made to verify an abridged and decreased model. However, the increasing research interest in writing moves in academic writing necessitates a research synthesis that systematically summarizes all the models for the purpose of writing different sections of academic research articles. Thus, the present study raises research attention on genre moves in EAP RAs and aims to identify an aggregated network of models amenable in various sections of research articles. Also, no meta-synthesis has been conducted related to disparate number of models in different sections of RAs in terms of their constituting moves and steps and existing models thereof. Accordingly, this study aims to establish a more reductive model which synthesizes different available models into one model and can offer an insight into the organization of the different sections for RAs writing to enhance the writers' discourse competency.

Research Question

In specific, the current study addresses the following research question:

- What are the key dimensions (major components, parameters, and features) of a conceptual model of academic RA Generic Competence?

Methodology

Following the qualitative paradigm and in line with the goal of the study, a "qualitative meta-synthesis" (Walsh & Downe, 2005) approach was adopted as the research method. The term "qualitative meta-synthesis" was first coined by Stern and Harris (1985) and is known to be an inductive and interpretive method designed to develop a common conceptual framework based on qualitative findings. The strategy of synthesizing results in the translation of related studies into one another and integration of ideas and concepts across different studies.

All the available models of RA generic moves were collected through a search in the literature, and the moves in different RA sections were compared, contrasted, and combined. Walsh and Downe (2005) outlined a seven step process for qualitative meta-synthesis: (1) framing a meta-synthesis exercise, (2) locating relevant papers, (3) deciding what to include, (4) appraising studies, (5) comparing and contrasting exercise, (6) reciprocating translation, and (7) synthesizing translation.

Framing a meta-synthesis exercise

Identifying a research interest and adopting an appropriate research question frame the meta-synthesis exercise. The question in this study addressed the underpinning themes and concepts in the different models of RA generic moves which were available in the literature and producing a common frame of reference for academic RA writers. This stage involved mapping research evidence relevant to the RA schematic structure and prioritizing major models and theories for further investigation.

Locating relevant studies, deciding what to include, and appraising studies

This stage involved an electronic search in order to locate topically relevant studies and collect all the possible sources in the search source indexes and databases. At this stage of screening, a "berry picking" procedure (Bates, 1989) was followed. In order to locate the available generic moves and their relevant models, this procedure involved citation analysis undertaking a search for the original models in the articles citations. This stage also helped to find more relevant studies through a recursive web search of citations using Google and Google Scholar. This literature search yielded 391 abstracts and 354 research papers that initially appeared to be relevant. In the appraisal step, considering sample quality criteria (Atkins et al., 2008), low quality studies were screened out to increase the rigor of meta-synthesis process. Moreover, in case of different models for one specific RA section, the recency, comprehensibility, and inclusiveness of models were taken into consideration. Finally, twenty six articles were selected and accumulated for final meta-synthesis. Thus, this study applied purposive sampling to screen relevant studies in line with the research objectives. Table 1 illustrates the number of screened and selected references, abstracts, articles, and models for meta-synthesis.

Table 1. Number of Screened and Included Materials

Materials	Number
Total references retrieved	2024
Total abstracts screened	391
Total full papers screened	354
Total studies for final inclusion	26

Comparing and contrasting exercise

Meta-synthesis allows for juxtaposition of different studies to determine how models were similar or different from each other. In this line, different moves in the models were compared and contrasted through an in-depth reading of the models and exploring the recurring and common concepts. Several studies seemed to use borrowed elements or build upon previous models, while some were more self-sufficient and independent from other models. Comparing and contrasting the studies in this way reveals the homogeneity and heterogeneity of models (see Table 2). This table shows that studies are not refutations of one another; rather, they seem to be reciprocal from which a line of argument can be generated.

Table 2. A Comparison of Studies in Terms of Focused Research Article Sections

N	Author	Abstract	Introduction	Methodology	Results, discussions, & conclusions
1	Weissberg & Buker (1990)	*			
2	Bhatia (1994)	*			
3	Santos (1996)	*			
4	Hyland (2000)	*			
5	Swales & Feak (2009)	*			
6	Swales (1981)		*		
7	Swales (1990)		*		
8	Swales (2004)		*		
9	Zappen (1983)		*		
10	Nwogu (1991)		*		
11	Samraj (2002)		*		
12	Hood (2009)		*		
13	Wood (1982)			*	
14	Wissberg & Buker (1990)			*	
15	Nwogu (1997)			*	
16	Lim (2006)			*	
17	Kanoksilapatham (2007)			*	
18	Kanoksilapatham (2015)			*	
19	Pho (2008)			*	
20	Huang (2014)			*	
21	Nwogu (1991)				*
22	Dudley Evans (1994)				*
23	Peacock (2002)				*
24	Yang & Allison (2003)				*
25	Bunton (2005)				*
26	Kanoksilapatham (2007)				*

Reciprocal translation

In this stage, overarching core categories (super-themes), subcategories (themes), and codes were obtained using a reciprocal translation process. This process is called reciprocal translation (Noblit & Hare, 1988) in the sense that through an inductive and interpretive process, the major concepts and metaphors are emerged. Then, we engaged a thematic coding strategy through an iterative categorization of codes and themes. Doing this, a priori list of codes and categories was prepared based on theoretical background of the study. Afterwards, key codes and concepts in each model were identified and synthesized following the scheme of grounded theory (Strauss & Corbin, 1998), including the steps of open coding, axial coding, and selective coding.

In the open coding procedure, the codes in the aggregated models were classified into the initial categories, and the codes that did not match with any of the categories were regarded as a new category. In the phase of axial coding, all the interlinked categories and codes were then transformed into descriptive themes.

Synthesis of translation

The final step of qualitative meta-synthesis involved synthesizing the translated, reconsolidated, and juxtaposed themes, categories, and concepts to identify a general interpretation of the phenomena. In the phase of selective coding, the overarching theories and components were derived as grounded in the interconnected themes present in the underlying models.

Results and discussions

As a result of recursive search in the literature, twenty six studies relevant to different generic moves and steps of RA sections were qualitatively met-synthesized using the procedures above. As a result, four distinctive core categories of RA generic structures were identified including the generic competency of RA abstract, introduction, methodology, and discussion. A subsequent reading of many articles confirmed the use of these elements for the analysis of moves in different parts of RA. In the procedure of grounded theory, categorizing the latent themes in the evidence and the process of repetitive analysis led to the emergence of four dimensions. Table 3 illustrates the frequency of codes and concepts for the main dimensions of the synthesized model following the steps of grounded theory.

Table 3. Frequency of Obtained Codes and Concepts

Core category	Frequency of concepts	Frequency of codes
Generic abstract competence	5	34
Generic introduction competence	3	55
Generic methodology competence	4	55
Generic discussion competence	7	74
Total	19	281

As follows, the synthesized model is described in detail following an explanation of the major components of the accumulated models. Also, the features of different models for distinct RA sections are compared and contrasted in terms of the constituting moves.

RA abstract section generic competency

RA abstract structure is the first core category obtained through the qualitative meta-synthesis extracted from the synthesis of thirty four codes and five concepts. In view of the crucial role of abstracts in academic discourse communities, several scholars have provided guidelines as to the way abstracts should be structured. For example, Bhatia (1994) proposed a four-move model which entails the four following moves: 1. Introducing the purpose (what the author did); 2. Describing the methodology (how the author did it); 3. Summarizing the results (what the author found); and 4. Presenting the conclusions (what the author concluded). This model has been accepted and applied by many scholars (e.g., Swales, 1990; Salager-Meyer, 1992; Santos, 1996; Phantama, 2000; Promsin, 2006). However, Santos (1996) added a new move "situating the research" to account for the abstract structure in Applied Linguistics. This move contains two sub-moves, statement of current knowledge and statement of problem and appears at the beginning of the abstract.

Also, some scholars have claimed for five-move models for the abstract structure. Weissberg and Buker (1990) presented a five-move model for the structure of an abstract including *Background*, *Purpose*, *Method*, *Results*, and *Conclusion*, with the first move being optional. Swales and Feak (2009), likewise, suggested a five element structure for an abstract, namely, *Background*, *Aim*, *Method*, *Results*, and *Conclusion*. Hyland (2000) also proposed a similar framework for the abstract structure. The introduction move in this framework included four steps: arguing for topic prominence, making generalizations, defining terms, objects, or processes, and identifying a gap in current knowledge. The purpose was stated in the second move. The method move also included describing the participants,

instruments, and procedure. Finally, the last move involved the three steps of deducing conclusions, evaluating the research value, and presenting recommendations.

These studies suggested a five move structure for the abstract although entitling the moves differently. However, Hyland's (2000) model, as a more elaborate model with specified steps, has been influential in a plethora of studies (Li, 2011). In this framework, instead of the result move a product move is adopted. As Hyland (2000) justifies, the product move can better account for abstracts from the social science fields which often include empirical results and statements of arguments.

Overall, based on the meta-synthesis of the previous studies, the following model was extracted to successfully build upon the previous models and constitute all the elements in the revised versions. Table 4 indicates different moves and their constituent steps.

Table 4. A Meta-Synthesized Framework for the RA Abstract Structure

Move	Steps
Introducing	<ol style="list-style-type: none"> 1. Situating the research in the current knowledge and arguing for topic prominence 2. Stating the problem to be investigated
Stating the purpose	<ol style="list-style-type: none"> 1. Stating the aim of the study
Describing research method	<ol style="list-style-type: none"> 1. Describing the participants 2. Describing the instruments for data collection 3. Describing the procedure of data collection and analysis
Presenting results	<ol style="list-style-type: none"> 1. Describing the main findings
Stating conclusions	<ol style="list-style-type: none"> 1. Deducing conclusions from results 2. Presenting study implications in terms of the research value 3. Presenting implications and recommendations

RA introduction section generic competency

The next super theme extracted in the interpretive procedure of meta-synthesis contributes to the structure of the RA introduction section and involves fifty five codes and three concepts. Swales (1981) claimed for a basic four-move structure in the introduction section, analyzing this section across a range of fields: 1. Establishing the research field, 2. Reporting previous research, 3. Preparing for present research, and 4. Introducing present research.

Swales (1990) later revised the structure to a three-move pattern, called the create-a-research-space model (CARS model): 1. Establishing a territory, 2. Establishing a niche, and 3. Occupying the niche. Each of the moves is obligatory and minimally consists of one component step. Research indicates that move 1 is present in most introductions of the academic articles (Chahal, 2014). This move is mostly accomplished through Step 1-2 and using emphatic lexical items (e.g., *certainly, key, one of the most*). Generally, centrality claims are realized through the strategies of expressing an increasing importance and interest; expressing a well-established territory or recency of the territory; and reference to the main issues of the discipline. The territory is also established through presenting the topic as problematic using the terms like *concern*, and *surprising* (Hood, 2009). Furthermore, this move is achieved through highlighting the topic's relevance to real world as opposed to the research world (Samraj, 2008; Hood, 2009). The second move entails the steps of counter claiming, indicating a gap, question raising, and continuing a tradition. These steps are characterized by connectors (e.g., *however, nevertheless*), lexical markers (e.g., *needs, desires*), questions (wh-word type, an auxiliary type, and statement like questions). This move is also realized through: A. Negative or quasi-negative quantifiers, B. Lexical negation, C. Verb phrase negation, D. Expressed needs, and E. Contrastive comments. Move 3 in CARS model is also realized by three steps: asserting research goal; announcing principal expected findings; and indicating RA structure. Despite important, this move has been found to be absent or optionally used in some introductions (e.g., Samraj, 2008; Hood, 2009; Chahal, 2014). Generally, the CARS model has affected later studies on the structure of introduction section (e.g., Bhatia, 1997; Samraj, 2002, 2005).

Several researchers have provided revised models for the structure of introduction section in RAs (e.g., Zapper, 1983; Nwogu, 1991; Swales, 2004; Samraj, 2002). Zapper (1983) proposed a six move structure for the RA introduction: goal, current capacity, problem, solution, and criteria of evaluation. Nwogu (1991) presented a revised model for the Introduction section which included 4 moves: (M1) presenting background information by reference to the established knowledge in the field, (M1S1), reference to the main research problem, (M1S2), reference to the local angle, (M1S3), and finally by explaining principles and concepts; (M2) highlighting overall research outcomes by reference to main research outcome (M2S1); (M3) reviewing related research by reference to previous research (M3S1) and by reference to limitations of previous research (M3S2); (M4) presenting new research by reference to authors (M4S1) and by reference to the research purpose (M4S2). Samraj (2002) also postulated some additional subcategories to the CARS model: claiming centrality in research; claiming centrality in the real world (Move 1), and indicating a gap in research; indicating a gap in the real world (Move 2). Swales (2004) also revised the CARS model with

simplifying the first two moves. In this revised version, Move 1 had only one step, topic generalization of increasing specificity, and Move 2 was reduced into two steps, indicating a gap and adding to what is known.

A comparison of the studies suggested that Swales' (1990) model, as an empirically-derived model of how good research article introductions commonly proceed, provides an inclusive framework of the moves in the introduction section. CARS model comprehensively outlines the rhetorical structure RAs authors employ in introducing their research. Thus, this model to a great extent guides the meta-synthesized model of introduction structure (see Table 5).

Table 5. A Meta-Synthesized Model of Generic Structure of Introduction Section

Move	Steps
Establishing the territory	1. Providing background information 2. Highlighting the importance of the main research subject 3. Reviewing previous research
Establishing the niche	1. Indicating a gap, problem, or question 2. Continuing previous research and adding to the known
Occupying the niche	1. Presenting new research 2. Outlining purposes

RA methodology section generic competency

The third super-theme identified in the meta-synthesis of the studies concerned the structure of the RA methodology. This core category was achieved synthesizing fifty five concepts and four codes. Although the CARS model was originally designed to analyze the introduction section, attempts have been made to apply variations of the model to the methodology section (e.g., Lim, 2006; Kanoksilapatham, 2005, 2012).

Two units were categorized as intriguing moves in some similar classifications of the method structure, including describing data collection procedures and describing data analysis procedures (Kanoksilapatham, 2007, 2015; ElMalik & Nesi, 2008; Li & Ge, 2009; Lim, 2006; Tessuto, 2015). However, different classifications had other functional units besides these core moves. Lim's (2006) model, for example, also included: introducing research methods and background, justifying procedures, describing the sample, and previewing results. Kanoksilapatham (2007) also added some constituent moves and steps to these two units: describing materials and detailing equipments. Similarly, Li and Ge (2009) and Elmalik and Nesi (2008) embodied one more step: Describing experimental procedures. Kanoksilapatham (2015) also added introducing procedural background, justifying procedures,

describing research site, describing the apparatus, describing statistical procedures, and declaring ethical statements. Tessuto's (2015) model was different from Kanoksilapatham's (2015) characterization in that he had one more step: describing the sample.

Nevertheless, other models have been later provided for the methodology section (e.g., Wood, 1982; Weissberg & Buker, 1990; Nwogu, 1997; Pho, 2008; Huang, 2014). Wood (1982) suggested the three moves of sample, apparatus, and procedure for the method section. Weissberg and Buker (1990) stated the following elements for the method section in an RA. 1. Overview of the experiment, 2. Population / sample, 3. Location, 4. Restrictions / limiting conditions, 5. Sampling technique, 6. Procedure, 7. Materials, 8. Variables, and 9. Statistical treatment. Nwogu (1997), in her study of the rhetorical moves of medical RAs, identified three main moves in the Method section: (M1) describing data-collection procedures, (M1S1) indicating source of data indicating data size, (M1S2) indicating criteria for data collection; (M2) describing experimental procedures, (M2S1) identification of main research apparatus, (M2S2) indicating process of data classification, (M2S3) indicating criteria for success; (M3) describing data analysis procedures, (M3S1) defining terminologies, (M3S2) identifying analytical instrument/procedure, and (M3S3) indicating modification to instrument / procedure.

Pho (2008) suggested another structure for the method section. Pho's rhetorical characterization involves two moves: (M1) Describing data collection procedures, (M1S1) Describing the sample, (M1S2) Describing research instruments, (M1S3) Elaborating on data collection procedures, (M1S4) Justifying data collection procedures; (M2) Describing data analysis procedures, and (M2S1) Recounting data analysis procedures. Huang (2014) also provided a new rhetorical structure for the Method section for the medical RAs which included four main moves: (M1) Describe study materials, (M1S1) Describing the types of data, (M1S2) Describing source of the data; (M2) Providing inclusion criteria, (M2S1) Describing the sample, (M2S2) Describing the characteristics, (M2S3) Describing the preliminary actions; (M3) Describing procedures, (M3S1) Measurement taken, (M3S2) Justifying the procedures, (M3S3) Referring to previous studies and (M4) Present the analysis of the experiments, and (M4S1) Statistical test techniques. In general, the third move has been revealed to be a crucial move in the methodology section (e.g., Kanoksilapatham, 2005).

All in all, table 6 shows a synthesized model of the moves and steps, the subcategory of moves, and sub-steps of the method section established in the present study. This model consists of 4 moves and can cover up all the limitations in the previous models and account for the method section in RAs in different EAP disciplines.

Table 6. Move Structure of the Method Section Based on Meta-Synthesis

Moves	Steps
Describing Sampling	<ol style="list-style-type: none"> 1. Describing the characteristics of the study subjects 2. Clarifying sampling criteria
Clarifying Instrumentation	<ol style="list-style-type: none"> 1. Clarifying the instruments and materials
Describing the procedure of data collection	<ol style="list-style-type: none"> 1. Clarifying the focus of the study 2. Describing the research design 3. Explaining exact steps of data collection 4. Defining the data collection period
Describing the data analysis	<ol style="list-style-type: none"> 1. Defining the variables 2. Explaining statistical techniques

RA discussion section generic competency

This super theme concerns the core category of discussion schematic structure which, by itself, encompasses the three subcategories of results, discussions, and conclusions. From the meta-synthesis of the related studies, seven themes were obtained from seventy four codes.

CARS model has been also applied for the analysis of the results (Brett, 1994) and discussion (Hopkins & Dudley-Evans, 1988) section. However, some scholars have provided new models for the results and discussion section (Nwogu, 1991; Dudley Evans, 1994; Peacock, 2002; Yang & Allison, 2003; Kanoksilapatham, 2007). It is worth noting here that most of the models have been proposed as concerned with the discussion section as a covering term which includes the elaboration of the steps of results, discussion, and conclusions.

Nwogu's (1991) model, for example, consists of two moves: (M1) explaining research outcomes by stating a specific outcome, (M1S1), explaining principles and concepts, (M1S2), indicating comments and views, (M1S3), and indicating significance of main research outcomes (M1S4); (M2) stating research conclusions by indicating implications of the research, (M2S1), promoting further research, (M2S2), and stressing the local angle, (M2S3).

Dudley-Evans (1994) later offered a model for the Discussion section. There are three main parts to a discussion including some subparts: (M1) Introduction, (M1S1) Restating the aim, (M1S2) Work carried out, (M1S3) Summary of the method used, (M1S4) Restatement of the relevant theory or previous research, and (M1S5) Statement of the main results/findings of the research; (M2) Evaluation, (M2S1) Background information, (M2S2) Statement of numerical results, (M2S3) Findings arising from the research results, (M2S4) claiming the expected and

unexpected outcomes, (M2S5) Reference to previous research, (M2S6) offering reasons for unexpected results, (M2S7) claiming for a generalization to the ongoing research, (M2S8) introducing limitations, and (M2S9) making recommendation and suggestions; and (M3) Conclusion and Future work, (M3S1) a summary of main results and claims, and (M3S2) a recommendation about future work. Yet, Dudley-Evans (1994) recognizes the statement of the results or findings and reference to previous research as the most important moves.

Peacock (2002) analyzed the moves used in discussion sections of RAs in seven disciplines namely, Language and Linguistics, Public and Social Administration, Physics, Biology, Environmental Science, Business, and Law and offered a revised version of Dudley Evans model: (M1) background information; (M2) findings with or without a reference to a graph or table; (M3) expected or unexpected outcomes; (M4) reference to previous research; (M5) explaining the reasons for expected or unexpected results; (M6) claim contributions to research; (M7) limitation; and (M8) recommendation and suggestions.

Yang and Allison (2003) also offered a seven move structure for research article discussions: (M1) presenting background information; (M2) reporting results; (M3) summarizing results; and (M4) commenting on results; (M4S1) interpreting results; (M4S2) comparing results with literature; (M4S3) accounting for results; (M4S4) evaluating results; (M5) summarizing the study; (M6) evaluating the study; (M6S1) indicating limitations; (M6S2) indicating significance / advantage; (M6S3) evaluating methodology; and (M7) deductions from the research, (M7S1) making suggestions, (M7S2) recommending further research, and (M7S3) drawing pedagogic implication. Based on some investigations, Move 4 was the most frequent move (Yang & Allison, 2003; Amnuai & Wannaruk, 2013). The steps (Interpreting results) and (Comparing results with literature) were relatively frequent in the past research.

Kanoksilapatham's (2007) model was also established based on the revised version of CARS model. The Moves are: (M1) contextualizing the study, (M1S1) describing established knowledge, (M1S2) making generalizations; (M2) consolidating results, (M2S1) restating methodology, (M2S2) stating selected findings, (M2S3) referring to previous literature, (M2S4) explaining differences in findings, (M2S5) making claims, (M2S6) exemplifying; and (M3) stating limitations, and (M4) suggesting further studies.

Despite the more recent models in the literature, Dudley-Evans' model has been found as the most frequently used model and the most comprehensive paradigm introduced so far for this type of research (Peacock, 2002). In addition, it has been used in several studies (Holmes, 1997; Kanoksilapatham, 2005; Posteguillo, 1999) across various disciplines (Computer Science, Biochemistry, Physics, Biology,

Environmental Science, Business, Language and Linguistics, Public and Social Administration, and Law) and has proven to be a reliable paradigm for analysis of RA results and discussion sections.

The final moves of almost all the models of discussion section also contributed to the conclusion section. Move 1 has been found to be a frequent occurrence in the conclusion sections (Yang & Allison, 2003; Amnuai & Wannaruk, 2013; Aslam & Mehmood, 2014). However, Bunton (2005) proposed a separate model for the conclusion section including four moves: (M1) summarizing the study; (M2) evaluating the study; (M2S1) indicating significance/advantage; (M2S2) indicating limitations; (M2S3) evaluating methodology; (M3) practical Implications and recommendations; (M3S1) implications; (M3S2) recommendations; and (M4) future research. This model also has a lot in common with the ending moves of described models for the schematic pattern of discussion section.

Nonetheless, it should be emphasized that most of the models incorporated results, discussions and conclusions moves. In other words, the beginning moves in these models were concerned with the results sub-section and the ending moves with the conclusion section of RAs. The overlapping moves between sub-sections were apparent in almost all the models. The meta-synthesis of the proposed models for the writing RA discussion section, led to the emergence of table 7 which sums up all the important moves and steps in the existing models.

Table 7. Move Structure of the Discussion Section Based on Meta-Synthesis

Move	Steps
Presenting background information	<ol style="list-style-type: none">1. Restating the aim / research questions2. Summarizing the conducted study3. Summarizing the methodology
Reporting results	<ol style="list-style-type: none">1. Presenting results
Summarizing the results	<ol style="list-style-type: none">1. Summarizing what was found
Commenting on results	<ol style="list-style-type: none">1. Interpreting results2. Comparing results with literature3. Accounting for results4. Evaluating results
Summarizing the study	<ol style="list-style-type: none">1. Summarizing the research
Evaluating the study	<ol style="list-style-type: none">2. Indicating significance/advantage3. Indicating limitations4. Evaluating methodology
Deducing from the research	<ol style="list-style-type: none">1. Drawing Implications2. Making suggestions3. Recommending Further research

A model of generic competence in writing EAP RAs

The current research aimed at a construct definition of a model of academic RA generic competence based on a meta-synthesis of available models in the literature. The underpinning components of the RA generic competence were identified and extracted via semantic analysis. Table 8 represents a new scheme of the resulting framework on the basis of a meta-synthesis of the previous models.

Table 8. A Meta-Synthesized Model of Generic Competency in Writing EAP RAs

Dimensions	Concepts	Description
Abstract	Introducing	To establish context and background of the paper
	Stating the purpose	To indicate purpose and intention behind the paper
	Describing method	To provide information on design, procedures, data collection and analysis approach
	Presenting product	To state main findings or results
	Stating conclusion	To interpret results, draw inferences, and make implications
Introduction	Establishing the territory	To establish the broader subject, research area, and contribution of the study to the interest of the academic circle
	Establishing the niche	To indicate the particular subject, highlight some of the shortcomings, vague points, and gaps in the territory
	Occupying the niche	To inform the academic circle of the objectives, procedures, structure, and possible study outcomes
Methodology	Describing sampling	To describe how the study participants have been sampled and what are their characteristics.
	Clarifying instruments	To clarify the instruments, materials, and tasks incorporated in the study.
	Describing procedures and data collection	To describe how the study was conducted step by step
	Describing data analysis	To describe what mathematical techniques having been used to understand and interpret the data
Discussion	Presenting background information	To provide background about theory/research aims/methods
	Reporting results	To present the results of the study using graphs, tables, and figures
	Summarizing results	To sum up the results
	Commenting on results	To establish the meaning and significance of the research results and make claims in relation to the relevant field and prior research
	Summarizing the study	To summarize the study by highlighting the findings
	Evaluating the study	To judge the study in terms of its weaknesses and strengths
	Deducing from research	To draw inference about the results, propose practical guidelines for further study, and draw implications

Conclusions and implications

This study employed a qualitative meta-synthesis approach to systematically compare and contrast twenty six models related to RA generic patterns and propose a synthesized model as a common framework of reference. This common framework consists of four major components: abstract generic structure, introduction generic structure, methodology generic structure, and discussion generic structure. The discussion component can be decomposed into three themes, including results, discussion, and conclusions. Accordingly, the whole process of inductive thematic coding resulted in a total of six themes concerning the schematic pattern of abstract, introduction, methodology, results, discussion, and conclusions subsections of the RA.

The synthesized model is, thus, of great help to students in different academic fields in that it provides them with an overall view of the RA structure from the abstract section through to the conclusions. This paper also widens RA authors' knowledge of different moves and steps to develop a body of academic discourse to be publishable in high refereed journals. According to Rezvani and Saeidi (2019), students need to get familiar with various text forms and genres, and identify how these different genres work in order to make decisions about the kind of writing they want to perform. It is therefore expected that the results of this investigation can benefit novice writers in the construction of a more readable and acceptable RA in different EAP fields. Furthermore, this article can yield an implication for academic RA writers to understand whether they have the knowledge of diverse moves of different sections of RAs. This study also offers a valuable resource for EAP instructors to apply the meta-synthesized frameworks in their classes in order to guide their students in generating an acceptable RA likely to be published in international scholarly journals. However, as a caveat to the current study, it should be asserted here that the synthesized model may not be a substitutive model for the prior models but rather it has an accumulative nature in the sense that it embodies the key elements in the previous frameworks.

Future research can target a bottom up exploration of frequency, range, and distribution of moves and steps in different sections of research articles and in any specific academic discipline. Further meta-synthesis studies can be also undertaken for greater number of studies and across different academic fields. Additionally, a cross-linguistic comparison of different generic structures can be a potential issue for future research.

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