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A Genre Analysis of Academic Lectures of Literature and Computer Science: Rhetorical Move Structures and Disciplinary Variations

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摘要

過往研究表明，關於學術課堂中語步結構的知識可以促進學生對學術課堂內容的理解。然而仍有一些問題尚待解決，如：過去分析的學術課堂和講課教師數量有限、前人研究僅針對某些課堂階段進行分析而沒有完整探究課堂的整體語步結構、且並未探討課堂的語步結構是否存有學科上的差異。為了解決這些問題並拓展現階段對學術課堂體裁的理解，本研究基以自耶魯大學和麻省理工學院開放式課程所收集的學術課堂逐字稿與課堂錄影，對學術課堂的整體語步結構進行更廣泛的分析。為了探討學術課堂中的語步結構是否存在著學科差異，本研究亦針對文學課堂和電腦科學課堂的語步結構進行比較。此外，考慮到詞串在組織學術課堂言談中的重要性，因此本研究欲分別找出學術課堂中各個階段的詞串，並分析它們是如何幫助構建學術課堂中不同階段的言談目的。根據所收集的學術課堂資料，本研究提出了一個包含二十一個語步和二十三個步驟的語步框架。其中，課堂導論階段包含了五個語步和十一個步驟；課堂主體階段包含了十三個語步和七個步驟；而課堂總結階段則包含了三個語步和五個步驟。據此框架，本研究分別找出了文學和電腦科學課堂的語步結構並進行比較。比較發現：(1) 兩個學科在課堂中採用了不同數量的語步及步驟，又以文學課堂使用了更多的語步而電腦科學課堂使用了更多的步驟；(2) 約有百分之二十的語步為個別學科特有，這些語步也進一步反映出個別學科的特色：文學課堂特有的語步類別反映了該學科以文本闡釋為核心的特質，而電腦科學課堂

特有的語步類別則反映了該學科以應用和問題解決為本的特質；(3) 在兩個學科共有的語步類別中，約有五分之一的共有語步有常規性的差異，說明兩個學科在採用個別語步時有不同的偏好。比較結果進一步凸顯了電腦科學領域的講師在課堂導論階段習慣援引先前課堂討論過的內容，而文學領域的講師在課堂總結階段則傾向於強調後續課程的計劃。這些研究結果證實，學術課堂中的語步結構確實存在著學科差異。此外，通過對不同課堂階段中的詞串作用探究，本研究發現有些詞串特別與某些語步或課堂階段有關，而詞串的功能也能反映出不同課堂階段的交際目的，如：在課堂導論階段的詞串多與組織課堂結構和表明教師意圖等目的的語步有關，而在課堂主體階段出現的詞串則較少有組織課堂結構的功能，而是多具有立場表達和指涉的功能。本研究結果亦針對學術英文教學與師資培育提出教學建議。本研究所提出的語步框架和學科特有的語步可用以輔助修習學術英語學生對學術課堂的理解能力，並增進他們對學術課堂體裁和學科差異的認知。此語步框架也可提供給非母語教師和新手教師，幫助他們更加了解學術課堂是如何以語步構建的，進一步做為輔助教師備課之參考。

關鍵詞：學術課堂、語步分析、學科差異、詞串

ABSTRACT

Past research has indicated that the knowledge concerning the rhetorical move structure of lectures can facilitate non-native students' lecture comprehension. However, issues remain to be addressed, including the limited number of lectures and lecturers analyzed, the restricted focus on certain lecture phases without exploring the entire move structure of lectures, and the underexplored issue of the potential influence of discipline on move structure of lectures. To address these issues and expand the current understanding of lecture genre, this study analyzes the entire move structure of lectures drawing on lecture data from Open Yale Courses and MIT Open Courseware. To explore whether there are disciplinary variations in terms of move structures of lectures, this study further compares the move structures of literature lectures and computer science lectures. Moreover, considered the essential role of lexical bundles in structuring lecture discourse, this study also investigates the frequent lexical bundles in different lecture phases to explore how they help structure the discourse in different lecture phases. The current analysis results in a move framework of lectures consisting of twenty-one moves and twenty-three steps, with five moves and eleven steps identified in the beginning phase, thirteen moves and seven steps identified in the main body phase, and three moves and five steps identified in the ending phase. Based on the move framework, the respective move

structures of literature lectures and computer science lectures are also generated and compared. The comparison reveals that: (i) the two disciplines employ different numbers of moves and steps in lectures, with more moves employed in literature lectures and more steps employed in computer science lectures; (ii) around twenty percent of the moves are discipline-specific, with moves typical to literature reflecting its interpretive nature while moves specific to computer science reflecting its applied and problem-solving orientation; (iii) among the move categories shared by the two disciplines, the conventionality of around one-fifth of them are different, suggesting the different preferences between the two disciplines in employing individual moves. The comparison further highlights computer science lecturers' conventional move to refer to contents discussed previously in the beginning phase, and literature lecturers' tendency of highlighting plans of future lessons in the ending phase. These findings confirm that there are indeed disciplinary variations in terms of move structures of lectures. Moreover, the exploration of lexical bundles in different lecture phases reveals that some lexical bundles are especially associated with certain moves or phases. Particularly, lexical bundles in the beginning phase are mostly related to moves realizing purposes of organizing structures and expressing intentions, while those identified in the main body phase seldom serve a discourse-organizing function, but primarily perform stance and referential functions. These findings have

implications for EAP teaching and learning, and teacher education. The proposed move framework and the discipline-specific moves may help improve EAP students' lecture comprehension, and their awareness of lecture genre and potential disciplinary differences. The framework may also inform non-native and novice lecturers regarding how lectures are rhetorically structured, further supporting their lesson planning.

Keywords: academic lectures, rhetorical move analysis, disciplinary variations, lexical bundles

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CHAPTER ONE

INTRODUCTION

1.1 Background

With a growing number of non-native students attending courses in universities in English-speaking countries, many students are taking intensive English courses to improve their language skills for a variety of university settings. (Flowerdew & Miller, 1997). Among various university genres, the genre of academic lectures plays a crucial role in non-native students' academic success (Cheng, 2012; Olsen & Huckin, 1990), because it is a primary genre of instruction and an important channel for students to acquire discipline-related knowledge as well as other class-related matters (Ellington, 2000; Flowerdew, 1994; Flower & Miller, 1997; Suviniitty, 2010; Thompson, 1994; Young, 1990, 1994).

However, as suggested by previous studies (Olsen & Huskin, 1990; Thompson, 1994; Lee, 2009), lecture comprehension remains an obstacle for many non-native students, regardless of proficiency level. Although most studies on lecture comprehension focus on the difficulties non-native students are facing, some researchers (Barr, 1990; Lee, 2009) have indicated that delivering lectures is also a very challenging task to non-native and novice lecturers.

Past research (Chaudron & Richards, 1986; Flowerdew & Miller, 1997) has

revealed the positive effect of discourse structuring devices on lecture comprehension, such as macro-markers (e.g., *what I'm going to talk about today*) and discourse markers (e.g., *so*, *okay*). Among them, lexical bundles have been one of the key research focuses because of their discourse-organizing role of structuring academic lectures as well as the many other functions they could perform.

On researching how academic lectures are structured from a more global level, rhetorical move structure has also been found to play an essential role in non-native students' lecture comprehension. Although the analysis of rhetorical move structure is commonly adopted to describe text organization of research papers following Swales' tradition (1981, 1990), the research tradition has later been adapted to research academic lectures as well (e.g., Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994).

Previous finding has suggested that move structure of academic lectures could provide "as accurate a model of lecture as possible" (Samraj & Petrovic, 2015, p. 94), thus facilitating students' lecture comprehension and relevant listening skills. Different lecture phases (e.g., *introduction, closing*) have also been found to consist of "a series of rhetorical strategies instructors employ to explicitly create a coherent discourse", which provide listeners with "a cognitive road map for navigating lectures" (Lee, 2016, p. 100). As indicated by previous studies on academic lectures

(Thompson, 1994, 2003; Young, 1994), it is essential that students can successfully create mental maps to help process the information delivered to comprehend a lecture. Rhetorical move structure of academic lectures thus serves an important role in guiding students through academic lectures and facilitating lecture comprehension.

Despite the important role of rhetorical move structure on lecture comprehension, only a handful of studies have investigated it (e.g., Thompson, 1994; Lee, 2009, Cheng, 2012; Petrovic & Samraj, 2015). Although the existing studies have contributed greatly to expand our understanding on the topic, there are still issues that remain to be further addressed, including the limited move analyses on certain phases, the underexplored issue regarding the potential disciplinary variations of move structures, and the restricted number of lectures analyzed.

The current study thus aims to address these issues by analyzing the rhetorical move structure of academic lectures in their entirety based on a larger number of lectures from different disciplines. Also, as knowledge of a genre needs "to be supplemented by a knowledge of the specific language associated with each move" (Henry & Rosenberry, 2001b, p. 155), this study also aims to identify the frequent lexical bundles in academic lectures and explore their roles in structuring different lecture phases.

This study has the potential to expand the current understanding of the lecture

genre in terms of its move structure and the frequent lexical bundles in different phases. The findings are also expected to shed light on EAP teaching and learning, and teacher education, because the proposed move structure could serve as supplementary materials to facilitate EAP learners' lecture comprehension. The comparison of move structures between different disciplinary lectures could also provide pedagogical suggestions to EAP teachers in terms of whether a discipline-specific instructions regarding move structure in lectures should be provided. Moreover, the proposed move structure can provide a useful outline for novice or non-native lecturers to structure lectures.

1.2 Purpose of the study

The purpose of this study is to expand the current understanding of academic lectures and to address the gaps in previous studies by investigating the rhetorical move structure of academic lectures in their entirety and exploring whether there are disciplinary variations in terms of rhetorical move structures in lectures, focusing on those in the disciplines of literature and computer science. Previous cross-comparison studies focusing on disciplinary variations usually start with comparing disciplines between hard sciences and soft sciences, such as the investigation of the use of lexical bundles between history (soft sciences) and biology (hard sciences) (Cortes, 2004), and the functional language use across physics (hard sciences), chemistry (hard

sciences), and English (soft sciences) (Cotos & Chung, 2019). Cross comparisons between hard- and soft-science disciplines are usually conducted first to make sure there are indeed disciplinary differences, before researchers move on to explore differences among sub-disciplines. Given that disciplinary variations in terms of move structures of academic lectures are rather underexplored, this preliminary exploration thus mainly focuses on determining whether there are disciplinary variations between the two main scientific fields (i.e., hard sciences and soft sciences) in terms of move structures. In this light, the lectures of literature and computer science are selected, representing two broad scientific fields respectively, for the current exploratory comparison. Such exploration may help illuminate the extent of diversity among different disciplines in terms of move structures of the lecture genre.

In addition to investigating the lecture genre from a rhetorical perspective, this study also explores its linguistic features from a bottom-up perspective, specifically the frequent lexical bundles. Previous studies have demonstrated the importance of lexical bundles in structuring the lecture genre, connecting linguistic structures with move structure of academic genres, and describing disciplinary variations in academic genres. Lexical bundles are also found to be facilitative of students' comprehension of discourse. It is therefore essential to identify the frequent lexical bundles appearing in academic lectures and investigate how they help structure and characterize the lecture

discourse in different phases.

This study combines a focused Swalesian rhetorical move analysis and a corpus-based discourse analysis to extensively examine the rhetorical move structure of academic lectures in their entirety without limited to certain part-genres, as well as to explore the frequent lexical bundles that help characterize academic lectures as a genre and the way in which these lexical bundles structure the discourse in different phases of academic lectures. To be more specific, this study seeks to answer the following three research questions:

1. What are the rhetorical move structures of academic lectures in the disciplines of literature and computer science?
2. Are there disciplinary variations between the literature lectures and the computer science lectures in terms of their rhetorical move structures?
3. What are the frequent lexical bundles in different phases of academic lectures? How do they function to structure each phase?

1.3 Significance of the study

The significance of the current study is the contributions it can potentially make to the fields of applied linguistics and English teaching and learning, particularly to the areas of genre studies, lexical studies, EAP instruction, and L2 teacher education. This study has the potential to make contributions to the field of genre studies in

several aspects. First of all, a relatively small number of genre studies have been conducted to explore spoken genres, compared to those investigating written genres. Several researchers have called for more research on spoken genres (e.g., Flowerdew, 1994; Hyland, 2002), admitting that there is a "relative paucity of work on spoken genres" (Hyland, 2002, p. 117). As this study focuses on analyzing the genre of academic lectures, this study thus has the potential to expand the current understanding of spoken academic genres and demonstrate how this type of genre can be characterized from a genre-oriented perspective. Since this study aims to explore the rhetorical move structure of academic lectures in their entirety, instead of only focusing on specific phases as most of the previous studies have done, the study thus has the potential to provide a comprehensive framework of move structure of academic lectures for further examination of lectures of other disciplines and to be used for developing pedagogical materials.

This study also has the potential to contribute to lexical studies, specifically furthering the current understanding of the lexico-grammatical role of lexical bundles in shaping the rhetorical move structure of the lecture genre. Previous studies (e.g., Biber & Barbieri, 2007; Biber, Conrad, & Cortes, 2004) have found that there is an abundance of lexical bundles frequently occurring in academic lectures and they perform various functions to structure the lecture discourse. Considering their

important role in structuring the discourse of this genre, one of the purposes of this study is thus to identify the frequent lexical bundles appearing in different phases of academic lectures to explore how they help to structure the lecture discourse. The identification of such lexical bundles and their locations in academic lectures of this study thus has the potential to increase the current understanding of the relationship between the typical lexico-grammatical features and the rhetorical move structures of academic lectures. Such investigation may demonstrate a broader picture regarding how academic lectures are developed with which frequent lexical elements.

Also, this study could potentially provide pedagogical implications to EAP instruction. The analysis of the rhetorical move structure of academic lectures may be helpful for academically-oriented non-native students who need to improve their comprehension of lectures delivered in English, especially those in English-speaking countries, since understanding such structure could help them construct a mental map and become aware of the explicit rhetorical strategies lecturers utilize to structure their lectures. This, in turn, could facilitate students' comprehension of lectures. This study thus may have the potential to provide pedagogical implications regarding improving non-native students' comprehension of lectures and better prepare them for lectures delivered in English.

In addition to EAP students, this study may also provide valuable implications

for L2 teacher education or for teacher training of novice teachers. Generally, teachers need to deliver discipline-related content knowledge in lectures while making sure the coherence of the information delivered, to create "a structured sequence of utterances which must help the listener to create a coherent mental representation of what [they are] trying to say" (Brown & Yule, 1983, p. 17). Although teachers are generally well-prepared before lecturing, it is inevitable that a certain amount of fresh talk and online-editing would take place in academic lectures (Thompson, 1994).

Although there have been more teacher training programs, such as the Preparing Future Faculty (PFF) program in the US offering doctoral students trainings regarding the responsibilities of a faculty member would need to take in universities including teaching (Seidel & Gaff, 2006), and the training programs for the growing number of international teaching assistants (ITAs) (Gorsuch, 2006), lecturers in universities usually do not receive any training regarding how to lecture (Barr, 1990, Morell, 2007; Thompson, 1994). They may "only pick up the discursive conventions of lectures incidentally through countless hours of observing and evaluating other lecturers" (Lee, 2009, p. 53). Thus, as Barr (1990) indicated, it should not be too surprising to find out that some university lectures "are not good at lecturing" (p. 21), because no such training is offered. This study may provide a helpful framework of academic lectures for the training of L2 teachers, ITAs, and novice teachers in terms

of how they could structure their lectures. With the potential help of the rhetorical move structure of academic lectures and the frequent lexical bundles in different phases, the prospective teachers at universities in English-speaking countries are likely to plan their lectures more effectively and confidently without entirely depending on their own experiences of observing courses and guessing the discourse conventions of lectures (Lee, 2009).

Moreover, since the study also aims to explore disciplinary variations in terms of rhetorical move structures of academic lectures, such analysis could also provide suggestions for both EAP instruction and L2 teacher education. This study may provide insights into whether the instruction regarding rhetorical move structure of academic lectures should vary according to EAP students' different disciplinary fields, or whether novice or L2 teachers from different disciplinary fields should be trained differently in order to deliver their lectures in ways that meet the conventions of their own disciplinary communities.

Collectively, this study may provide a clearer view in terms of what rhetorical moves consist the lecture genre, whether there are disciplinary variations in terms of move structure, what frequent lexical bundles are there in the lecture genre and how they function to structure the discourse and characterize such genre. Although this study is a preliminary research on the rhetorical move structure of academic lectures,

it has the potential to provide future studies a framework for further analyses on both linguistic and structural features of academic lectures.

CHAPTER TWO

LITERATURE REVIEW

This research aims to explore the genre of academic lectures by analyzing the rhetorical move structure in lectures of literature and computer science, and identify frequent lexical bundles in different phases of academic lectures to expand the current understanding of academic lectures from a genre-oriented perspective. Past studies on academic lectures, especially those related to how they are organized, should be reviewed in order to show the current findings and identify the issues that should be addressed further.

This chapter consists of two sections. The first section provides a brief overview of the lecture genre and discusses the obstacle in terms of lecture comprehension faced by non-native students and non-native and novice lecturers' challenge in terms of lecture delivery. This section also reviews studies investigating academic lectures concerning the ways they are organized and the relationship between lecture organization and lecture comprehension. The primary intention is to provide a general picture regarding what is known in terms of the structure of academic lectures and discuss the essential lexical components that help structure lecture discourse and may have essential impact on lecture comprehension of non-native students.

The second section of this chapter provides a detailed description of the analysis

of rhetorical move structure, including its research origin, its key elements, and how a rhetorical move analysis is conducted. After the general information regarding the analysis is introduced, the section then reviews studies applying the analysis for investigating different genres. Insights drawn from such analysis are also discussed. Then, previous research on the rhetorical move structure of academic lectures is also reviewed. The intention of this section is mainly to provide the details of the analysis of rhetorical move structure, as well as to show how much is known in terms of such structure of academic lectures, and what should be further investigated in order to increase the current understanding of how academic lectures are rhetorically organized.

2.1 Studies on academic lectures

2.1.1 Overview of the academic lecture genre

Similar to other academic genres, such as textbooks and tutorials, the main purpose of academic lectures is to deliver subject-related content knowledge, thus a pedagogical process genre in essence (Thompson, 1994). That is, the main functions of academic lectures include, but are not limited to, introducing key theories of certain disciplines, explaining complex concepts, elaborating constructs by providing examples, offering information additional to contents presented in current materials, integrating ideas from previous lectures to current lectures, and providing critical

evaluation of materials or research (Dudley-Evans & Johns, 1981; Young, 1990, 1994; Thompson, 1994).

Despite sharing a similar goal with other academic genres to pass on a sequence of information regarding certain disciplines or subject matters to students, academic lectures are more than a genre that merely delivers information (Thompson, 1994). In a lecture, a lecturer's role not only concerns offering usually lengthy monologue presenting discipline-relevant facts, but also involves evaluating "the information, methods and procedures…in terms of their validity, appropriacy, and so on" on a moment-by-moment basis (Dudley-Evans & Johns, 1981, p. 32). Furthermore, lecture monologue is considered an interplay of the three elements of "informing, evaluating and organizing" (Thompson, 1994, p. 172), a metalanguage providing content knowledge, lecturers' personal insights, and the organization of the lecture to the audience.

Given the nature of such genre, giving an effective and clear lecture monologue is in fact a very challenging task for lecturers. They are expected to be able to present and evaluate information "in a sequentially structured manner" (Lee, 2009, p. 43), so the audience will be able to construct a "coherent mental representation" based on their monologues (Brown & Yule, 1983, p. 17). It is reasonable to believe that such task poses even greater difficulties to non-native lecturers, considering that they

would need to overcome the language barrier and at the same time make sure that the delivery is informative, understandable, and well-structured so students can follow the lecture content.

In addition to the great challenges that lecturers are experiencing in the lecture genre both linguistically and cognitively, such genre also presents great difficulties for students as well (Lee, 2009). As Rost (1994) indicated, “It is misleading to assume that the lecturer ‘packs’ the lecture with information and the listener ‘unpacks’ it in a complementary fashion.” (p. 93). Instead, students have to process the language input while making sense of the often lengthy monologues in lectures (Thompson, 2003). Furthermore, they also need to “actively construct a coherent interpretation of what is probably a complex and cognitively demanding spoken message” (Thompson, 1994, p. 172), in order to successfully comprehend the information delivered in a lecture.

This is particularly challenging to non-native students due to the great processing burden imposed by academic lectures which is both linguistically and cognitively demanding (Flowerdew & Miller, 1997). Even non-native students with adequate English proficiency may still find such task very difficult (Flowerdew & Miller, 1997; Thompson, 1994; Young, 1994). However, unable to follow lecture contents and falling to grab crucial information in lectures may result in students’ failure in constructing a mental modal (Thompson, 1994). This could prevent them from

connecting ideas and organizing information, thus affecting the overall comprehension of the lecture. Considering the significant role of lectures in students' academic success, it is thus essential to improve their abilities to comprehend lectures.

The internationalization of university education has contributed to the strong need for non-native teachers to deliver lectures in English and for non-native students to understand lecturers in English as well. Therefore, English courses that are tailored to meet their specific communicative needs in academic lectures should be quite beneficial (Deroey & Taverniers, 2012). Because of the continuing importance of the lecture genre in university settings and the increasing number of foreign teachers and ITAs delivering courses, and non-native students entering universities in English-speaking countries, there have been many studies investigating the genre of academic lectures from a variety of perspectives. Since the goal of this study is to explore the organization of academic lectures and the potential disciplinary variations across lectures in terms of their rhetorical move structures, the following literature review sections would focus particularly on studies with these two foci.

2.1.2 Overall organization of academic lectures

Although lecture discourse is not as strictly planned as academic written discourse and is rather spontaneous due to its real-time nature, such discourse is still usually planned and more organized than other spoken discourse types such as casual

conversation (Flowerdew & Tauroza, 1995). Swales (2001) also argued that university lectures are "heavily signaled and signposted" (p. 35), considering that "lecturers tend to explicitly structure the organization of classroom discourse and highlight the relationship between ideas presented" (Lee & Subtirelu, 2015, p. 53).

Previous studies have indicated the crucial role lecture structures play in L2 students' lecture comprehension (Breen, 2001; Lee & Subtirelu, 2015), since learners have to find their ways to navigate through a lecture "by identifying the textual cues which signal a transition from one kind of talk to another …if they are to find their way through it in order to make sense of it" (Breen, 2001, pp. 311-312). Many researchers have therefore explored lectures by investigating how they are structured or by identifying lexical elements that could serve as cues signaling the structures of the discourse.

The importance of discourse structure to lecture comprehension has long been established. For example, Olsen and Huckin (1990) found that in engineering lectures some L2 students "may understand all the words in a lecture (including lexical connectives and other discourse markers) and yet fail to understand the lecture's main points or logical argument" (p. 33). This highlighted L2 students' inability to recognize main points in a lecture (Chiang & Dunkel, 1992). According to Olsen and Huckin (1990), those L2 students who failed to comprehend the lecture simply took

an “information-driven” strategy in comprehending the lecture. That is, they only aimed to retrieve information or facts from the lecture, without trying to recognize the more complex discourse structure underlying with speakers’ intentions. However, those L2 students who successfully comprehended the lecture took a “point-driven” strategy, as they tried to “see the discourse as having a single overriding main point and a number of subordinate points supporting it” (p. 41). The researchers thus suggested that L2 students should be taught to “listen to lectures in a more rhetorical, strategic way” (p. 33). In addition, they noted that the strategies taken by students is probably influenced by “a kind of disciplinary ‘cultural’ conditioning tied to method of science and engineering instruction” (p. 44). That is, L2 students not only should be taught strategies for lecture comprehension, but also should be aware of how the lectures in their own disciplines are conventionally structured, since disciplinary culture may to some extent affect how one lecture develops.

According to Olsen and Huckin (1990), students on engineering courses seemed to be relatively familiar with the lectures that were structured mainly based on descriptions of a series of facts and situations. Based on the finding, Tauroza and Allison (1994) therefore supposed that students on engineering courses would experience problems when trying to comprehend lectures with a more elaborated structure different from a conventional one. To examine their proposition, Tauroza and

Allison conducted a study to see whether students would detect the main points in a lecture following a more elaborate structure of problem-solution discourse: situation-problem-solution-evaluation. They found that most students failed to capture the main ideas in the lecture, and some students even misinterpreted some key ideas. The researchers thus argued that students should become familiar with the discourse structures of different types of academic lectures. More importantly, students should also be taught how to recognize the discourse structure of a lecture on their own so it will be easier for them to distinguish the type of academic lectures they are dealing with.

More extensively, Young (1994) proposed a comprehensive framework to describe the macro-structure and micro-features of lectures. The researcher investigated the macro-structure and the micro-features of seven university lectures from various disciplines. She then identified six metadiscoursal phases which form the macro-structure of university lectures: *discourse structuring*, *conclusion*, *evaluation*, *interaction*, *theory or content*, and *examples*. These six phases are believed to recur discontinuously as a lecture develops, and thus she considered a lecture to have multiple beginnings, middles, and ends.

Among the six phases, the relatively critical phase in university lectures is the phase of *discourse structuring*. This phase is where lecturers indicate to the audience

the directions of the lecture, which is thus also called “announcing phase” (p. 166) (e.g., *So what I will do first is*). The discourse structuring phase is especially highlighted by the researcher because it was frequently seen in her lecture data and also played an important role in signaling the occurrence of new information.

In terms of the pedagogical importance of such phasal analysis, Young claimed that knowledge of macro-structures of lectures could assist students in predicting and understanding lectures. Young further emphasized that ESP teachers should be familiar with such structure so they can present students with a schema that reflect what is going on in university lectures. Similar to the importance of schema in facilitating the understanding of narrative structure, Young argued that schema is also important for understanding expository spoken discourse (e.g., lectures), since the process of comprehension is also associated with filling the information conveyed into the empty slot of a schema properly (van Dijk & Kintsch, 1978). Such proposition was also supported by Tauroza and Allison (1994). They also further promoted the importance of raising students’ awareness of formal schemata of academic lectures.

Focusing primarily on structure variations of topic introduction in lectures, Palmer-Silveira (2004) established four trends in terms of the way in which a topic is introduced based on an examination of the lectures of law, business, and sociology.

The researcher emphasized that topic introduction is essential in a lecture in that it provides the audience with the information regarding what the lecture will be about and the aim of the lecture. The analysis of the introductions of the lectures allowed the researcher to propose four general ways regarding how a lecturer introduces a new topic in a lecture:

a) explicitly introducing the topic occasionally with an outline of the lecture

b) explicitly introducing the topic by referencing to previously acquired knowledge

c) introducing the topic by using an example

d) introducing the topic through a humorous remark

Among them, Palmer-Silveira indicated that the first and the second ways were found to be more common across the lecturers, showing the frequent metadiscursive feature of topic introduction in lectures. His finding also suggested the potential role metadiscursive devices play in structuring lecture introductions, which are also a trend drawing many researchers' attention.

Metadiscourse, which is referred to as "discourse about discourse" (Vande Kopple, 1985, p. 83), is one aspect that is frequently examined by researchers to understand how a lecture is organized and structured. It is originally considered a tool applied by writers to establish connections with the reader and to guide the reader

through the text, as well as to organize ideas (Hyland, 2005), which is also found to be used in spoken discourse by speakers to their audience. Mauranen (2010) further argued that metadiscourse is a "crucial aspect of human communication", and is more essential in spoken discourse compared to written discourse, considering speakers' greater "need to manage spoken interaction in real time" (p. 37).

Considering the important role of metadiscourse in spoken discourse, there have been many studies exploring lecture discourse from a metadiscoursive perspective. Some investigations targeted certain metadiscursive devices in cross-comparisons. For example, Crawford Camiciottoli (2004) compared the use of interactive discourse structuring between guest lecturers (L1 and L2) and classroom L1 lecturers. Lee and Subtirelu (2015) compared the use of metadiscourse between content classroom lectures and EAP classes conducted by native English speakers. Thompson (2003) investigated the text-structuring metadiscursive features in university lectures, and made comparison with those appearing in listening materials designed for EAP courses. From a multimodal perspective, the researcher also explored how changes of intonation serves as a resource to highlight the structure of lectures.

Ädel (2010) proposed an empirically-based taxonomy of metadiscourse and their discourse functions in a corpus of 30 academic lectures and 130 essays. Her taxonomy contains two main metadiscourse types, which are metatext and audience interaction.

The former describes how a lecture is organized (e.g., *last class I talked about*) and the latter highlights speaker-listener interactions (e.g., *did I answer your question*). The researcher suggested that "anyone using spoken and written academic English needs to be intimately familiar with the rhetorical acts and recurrent linguistic patterns involved in metadiscourse, both for comprehension and for production" (p. 94), which is potentially more important to non-native academic-oriented learners. Moreover, studying such devices is also considered very helpful to prospective lecturers because these devices can help them to more clearly see how a lecture is organized and structured (Bernad-Mechó, 2017).

2.1.3 Discourse-structuring lexical features of academic lectures

In addition to focusing on the overall structure of academic lectures in facilitating lecture comprehension, some researchers have turned their attention to smaller lexical components, such as discourse markers and lexical bundles, to investigate how they function as cues to signal different communicative purposes in academic lectures or how they help structure the lecture discourse.

Chaudron and Richards' (1986) seminal research investigated the effect of both macro-markers (e.g., *to begin with*, *one of the problems was*, *as you may have heard*) and micro-markers (or discourse markers) (e.g., *well*, *okay*, *so*, *now*) on students' comprehension of lectures. They found that macro-markers could better help students

to recall text materials compared to micro-markers. They argued that macro-markers provide signals for students to recognize topic transitions or to capture major ideas in lectures. Although students might not have a comprehensive understanding of the lecture contents or the rhetorical structure of the lecture, they can at least make use of these signals to construct an appropriate schematic model of the major parts in the lecture and grab some key ideas. Chaudron and Richards even noted that micro-markers may not be very helpful in terms of assisting students in comprehending lectures.

Flowerdew and Miller (1997) also highlighted the important role of macro-markers in lecture comprehension, stating that both native or non-native students do pick up on the use of such markers. If used well, such markers could be beneficial to students in listening comprehension. However, it was especially noted by them that students should be warned that there might be "false signals" (p. 40) when such markers are used. That is, although the lecturer has used a macro-marker, there might be no follow-up, as what the researchers observed in an authentic lecture where "a macro-marker was used but not followed up on" (p. 40).

Focusing on discourse markers, Flowerdew and Tauroza (1995) questioned Chaudron and Richards' (1986) proposition that discourse markers are not helpful in facilitating lecture comprehension. To figure out, they had one group of non-native

students listen to a lecture with discourse markers, while the other group of non-native students listened to the same lecture but with the discourse markers removed purposefully from the lecture. The researchers reported that non-native students found it very difficult to understand the content without discourse markers. The researchers thus argued that discourse markers play an essential role in terms of non-native students' listening comprehension of lectures. Biber, Johansson, Leech, Conrad, and Finegan (1999) later have also noted the importance of discourse markers in spoken discourse, considering them elements that are inserted at the beginning of a turn in conversation to interactively give signals to the interlocutor the direction of the talk.

Later, Jung (2003) conducted a study similar to Flowerdew and Tauroza's (1995) to investigate the effect of organization markers (e.g., *the point is*, *the next thing is*) on L2 learners' comprehension of important points in lectures. In the experiment, the students were divided into groups of marker and nonmarker, with the marker group listening to a lecture with organization markers included, while the nonmarker group listening to one without those markers. The students were later asked to recall and summarize the main points from the lecture. The result showed that the marker group comprehended the main points in the lecture better than the nonmarker group, suggesting the important role organization markers play in facilitating listeners' lecture comprehension. A similar research was conducted by Jung (2006) on

investigating the role of contextulization markers (e.g., *let me repeat it*, *to sum up so far*) on L2's learners' lecture comprehension. The result again showed that L2 learners exposed to lectures with contextualization markers could reach a higher level of listening comprehension.

More recently, Zare and Keivanloo-Shahrestanaki (2017) set out to investigate whether explicitly raising L2 learners' genre awareness through the instruction of importance markers (e.g., *you need to remember this*) will facilitate their retrieval of the important points in lectures. Their results showed that the learners who received explicit instruction on importance markers could better comprehend the lecture as well as grab more important points in the lecture compared to those students who did not receive such instruction. Such finding also emphasizes the importance of explicitly directing students' attention to such markers, so they are more likely to comprehend lecture contents better.

Overall, although there have been some mixed results regarding whether different types of markers could facilitate L2 learners' lecture comprehension, it is generally recognized that discourse-structuring expressions or text-organization markers play important roles in facilitating students' comprehension of lectures.

Another discourse-organizing lexical feature that have attracted much attention is the study of frequent recurrent multi-word expressions, also commonly referred to as

lexical bundles. This feature is usually studied through a corpus-based approach. For example, Biber et al. (2004) have taken a corpus-based approach and identified frequent lexical bundles drawing on a large collection of texts of university teaching and textbooks. They found that the lexical bundles frequently occurring in lectures can perform the functions of showing speakers' stance, making references, and organizing discourse. Lexical bundles that performed discourse organizing function are especially important in highlighting the structure of the lecture in that they could help signal the introduction of new topics or focus of topics, and the elaboration or clarification of topics. Biber et al.'s study also further showed that there are great variations in terms of the use of lexical bundles between university classroom teaching and textbooks.

Based on Biber et al.'s (2004) research, Biber and Barbieri (2007) further investigated lexical bundles across different registers in university settings. Their finding further highlighted the important role of discourse-organizing lexical bundles in lectures, as most lexical bundles identified in their study served such function. Nesi and Basturkmen (2006) also indicated the cohesive role of lexical bundles in structuring lecture discourse. They also emphasized that these lexical bundles performing a discourse signaling role could help students to "predict the nature of upcoming ideas and information" in lectures (p. 301). It was further emphasized by

the researchers that if a student is unable to recognize such signals, s/he will "be faced with additional cognitive processing demands, having to deduce both the intrinsic meaning of propositions, and make inferences about the relations between them" (p. 301).

In addition to the formulaic lexical sequence' functions of topic introduction and topic elaboration which were previously identified by Biber et al. (2004), Simpson-Vlach and Ellis (2010) further identified many more functions that formulaic lexical sequences could perform to organize lectures, such as serving as marking discourse, performing metadiscourse function, signaling textual reference, and emphasizing causal relationship.

These studies have demonstrated the great potential of frequent lexical bundles in facilitating non-native students' lecture comprehension, since many of them serve a discourse-organizing role in structuring lecture discourse, and can also be considered as cues signaling how a lecture is organized to students. Such expressions are thus important to students' lecture comprehension, as Hoey (2001) stated that "accurate recognition of the signals and their significance for the texts' development can greatly ease a reader's processing burden in that it lessens the need for large-scale hypothesis forming at the same time as all that detailed micro-processing going on" (p. 32). It should be the same case for the comprehension of lectures.

2.1.4 Disciplinary differences of academic lectures

Although discipline is commonly recognized in academic writing to be an important variable that could potentially affect language productions, there is only a limited number of studies that have explored disciplinary variations in academic lectures (Ädel 2008; Schleef 2008). One of the earlier research discussing such issue was Brown and Bakhtar (1988). They identified five distinctive styles of lecturing and found that different lecture styles are associated with different disciplines. For example, lecturers of humanities are commonly associated with oral style while visual lecturers are frequently seen in science-related disciplines. Based on the findings, Brown and Bakhtar claimed that discipline is a contributing factor that strongly influences a lecturer's lecturing style, regardless of his/her experiences or status. This proposition is further supported by Neumann (2001). The researcher suggested that the nature of individual disciplines could extensively influence lecturers' teaching styles. For example, lecturers of humanities were found to spend more time on lecturing, while lecturers of technology-related fields tended to focus more on laboratory instruction.

Deroey and Taverniers' (2011) functional analysis of lectures also discovered disciplinary variations of lecture functions across different disciplines (arts and humanities, life sciences, physical sciences, social sciences). They identified six main

functions of lectures: informing, elaborating, evaluating, organizing discourse, interacting and managing the class, with each main function supplemented with multiple subfunctions. The researchers reported that recounting, a subfunction of informing, was found frequently in lectures of arts and humanities while absent in lectures of physical sciences. Also, in terms of the function of evaluating, it was found that in lectures of the disciplines that are open to interpretations, such as arts and humanities, evaluations were used to express certainty or significance. Whereas, in lectures of the disciplines that are heavily based on experimental evidence, evaluations were usually used to highlight the establishment of certain concept.

On the other hand, several studies have taken ethnographic approaches to exploring disciplinary differences across lectures through classroom observation. Focusing on lectures of computer science, Hoey (1983) reported that the lecturers delivered lessons following a problem-solution pattern. Dudley-Evans (1994) found that lecturers of engineering usually adopted a point-driven strategy in presenting lecture contents, while lecturers of plant biology developed their lectures following the framework of plant classification. Flowerdew and Miller (1995) also found that in lectures of public and social administration, a comparison pattern was frequently used when lecturers were comparing differences between two systems. Concept

explanation and example illustration were however more often observed in economic lectures.

Particularly focusing on questions and answers in academic lectures, Chang (2012) investigated whether patterns of questions would be influenced by different disciplinary cultures. The forms and functions of questions appearing in lectures of different disciplines were compared. The researcher concluded that there are in fact much more similarities than differences in terms of question patterns in lectures across different disciplines.

These studies have demonstrated that there are disciplinary variations across lectures in a number of aspects, specifically in terms of the styles of teaching as well as the strategies adopted by lecturers to develop and organize lectures. As also argued by Dudley-Evans (1994), it would not be surprising to find that there are different organizational patterns, or at least different balance of different lecture types across different disciplinary areas, considering that differences across academic disciplines have long been established (Becher, 1994).

2.1.5 Summary

These studies have demonstrated that students' ability to recognize or understand the discourse structures of lectures could greatly influence their comprehension of lectures. Some lexical elements, such as discourse makers and lexical bundles, can

also be helpful to students' lecture comprehension, because they serve as cues signaling the directions of the lecture, the information regarding what is going to happen, and the transitions between topics. Therefore, if students are able to detect such elements, it will be easier for them to identify the major portion of a lecture so they are more likely to construct an appropriate schematic model of the lecture. This may help them locate the information conveyed in different parts of the lecture and form a rough picture of the main ideas included in the lecture. However, as what Flowerdew and Miller (1997) found, lecturers' use of linguistic cues, especially the macro-markers, is not consistent, and there will be false signals every now and then. That is, there may not always be reliable signals of the structure of the lecture. Although the findings regarding the effects of these lexical features on comprehension of lectures have been inconclusive, these studies nevertheless demonstrate the importance of lexical features, especially lexical bundles, in facilitating students' comprehension of lectures as well as in structuring the lecture discourse.

Previous studies also revealed that there are disciplinary variations in terms of certain aspects of academic lectures, such as teaching styles, functions of lecture discourses, and patterns of discourse structure. Although these studies have increased the current understanding in terms of in what aspects and to what extent disciplinary cultures could influence the delivery of academic lectures, the number of studies

focused on such issue and the aspects the existing studies took to approach such issue have been limited. Therefore, how lectures of different disciplinary fields are organized deserve more research from different perspectives. In addition to looking at teaching styles or discourse patterns of lectures, a top-down genre-oriented approach, i.e. rhetorical move analysis, has also been increasingly taken by researchers to shed light on how lecture discourse is structured rhetorically. The following section then turns to explain what a rhetorical move analysis is and discuss how it could improve our understanding of the lecture genre through its rhetorical move structure.

2.2 Rhetorical Move Structure Analysis

2.2.1 Genre and rhetorical moves

According to Swales (1990), genre is comprised of "a class of communicative events, the members of which share some set of communicative purposes" (p. 58). In Askehave and Swales (2001), they further elaborated this earlier definition, stating that "the communicative purpose of a genre…shapes the genre and provides it with an internal structure—a schematic structure" (p. 198). The identification and description of rhetorical structures of genres in terms of moves have been one of the crucial components in genre studies, because "the rhetorical purpose of individual moves contributes to the communicative purpose of genre as a whole" (Samraj, 2014, p. 386). That is, through examining a genre's move structure and the individual rhetorical functions of moves, the communicative purposes and characteristics of the genre can be elucidated.

Swales (2004) refers to a move as a "discoursal or rhetorical unit that performs a coherent communicative function" (p. 228). It can also be viewed as "a section of a text that performs a specific communicative function" (Connor, Upton, & Kanoksilapatham, 2007, p. 23), or "a stretch of written or spoken discourse" that achieves a specific purpose in the text (Cortes, 2013, p. 35). Each move has its own purpose, and when working together with other moves, they constitute the

communicative purpose of a text. That is, each move "contributes to the overall communicative purposes of the genre" (Connor et al., 2007, p. 23). Then together, moves "constitute the rationale for the genre" in that they help "shape the schematic structure of the discourse and influences and constrains choice of content and style" (Swales, 1990, p. 58). Analysis of rhetorical move structure can therefore expand existing understanding of a genre.

Typically, the general organizational patterns of texts are considered to be composed of a series of moves, with each move performing its purpose individually and together achieving an overall communicative purpose of the genre (Connor, Davies, & De Rycker, 1995). Although Swales (2004) indicated that move is a functional unit rather than a formal one, some researchers still tried to align moves with grammatical or linguistic units (Crookes, 1986). However, Samraj (2014) pointed out that "delineating moves in a genre" is a very challenging task for analysts (p. 386). Although each move at least contains a proposition, the length of a move varies from a few sentences to several paragraphs (Connor & Mauranen, 1999). Therefore, the process of identifying moves can be "a difficult and contentious activity", and even experienced readers "often fail to agree on the interpretation of moves (or where they begin or end)" (Bloor, 1998, p. 60).

In a move analysis, linguistic features are often used to help identify the

boundaries between moves (Cortes, 2013; Nwogu, 1997). As Swales (2004) admitted, the identification of moves and their boundaries are based on a "mixed bag of criteria" (p. 229), involving "our intuitions based on our knowledge of text schemata" (Samraj, 2014, p. 386). Due to the difficulties in identifying moves and their boundaries, many researchers have also included more than one raters in the identification process to increase the reliability of the coding process (e.g., Chang & Huang, 2015; Li & Ge, 2009).

In terms of the frequency of occurring, some move types are more frequent than others in a particular genre, making them conventional/obligatory moves, while the less frequent ones are usually considered as optional ones. However, there are variations among researchers in terms of the criteria applied to determine whether a move is considered conventional to a specific genre. Generally, a move is considered conventional if it appears in 100% of the texts (e.g., Flowerdew & Dudley-Evans, 2002; Basturkmen, 2012), while some researchers consider a move conventional if it appears in more than 50% of the texts (e.g., Lee, 2016; Li & Ge, 2009). Some studies even revealed that in some genres, such as conference proposals, conventional moves are not always necessarily presented (e.g., Halleck & Connor, 2006). That is, some genres are not as conventional as others are in terms of following rather fixed move structures. Instead, different degree of creativity might be allowed in different genres

in terms of the use of moves. In addition to depending only on frequencies of certain moves to determine whether a move is conventional or not, the length of a move taking up in a text as well as to what extent a move is recycled in a text are also criteria used by researchers to claim the importance of individual moves (Samraj, 2014).

In addition to moves, researchers also turn to identify units smaller than moves to describe what moves consist of in order to achieve their purposes. Generally, moves may contain one or multiple elements that "together, or in some combination, realize the move" (Connor et al., 2007, p. 24), which are referred to as "steps" (Swales, 1990), or "strategies" (Bhatia, 1993; Henry & Roseberry, 2001b), to specify "how the writer or speaker chooses to realize or execute the move" (Henry & Roseberry, 2001b, p. 154). Kwan (2006) referred to strategies as "non-obligatory and non-sequential constituents" of moves, and considers steps as the "obligatory and sequential constituents" of moves. Barron (2012), on the other hand, maintains that strategies can be used to refer to either moves or sub-moves. Despite great variations existing among the use of terms, *step* is relatively more frequently-used to describe the constituents of a move.

In terms of the components of a rhetorical move structure analysis, although it is argued that the description of a dual scheme containing both move and step could be

of higher value for pedagogical and descriptive purposes (Yang & Allison, 2003), not all descriptions of genres contain both of them. As Samraj (2014) pointed out, steps are functional elements that could be either optional or obligatory, which are in fact not given much importance in genre analyses (Kwan, 2006). Therefore, even when a genre is composed of dual scheme, not every move has constituent steps. As such, Samraj (2014) indicated that some moves are simply "more rhetorically complex" than others (p. 387).

In terms of the order of moves, Samraj (2014) highlighted the importance to consider both "the linear and hierarchical ordering of moves and their constituent steps" (p. 385). That is, in addition to considering the multi-layer nature of a genre in terms of the levels of move and step, the other key aspect to describe move structure of a genre is through the sequential order that moves and steps tend to appear. Swales (1990) argued that "there are good general and applied reasons for assigning numerical sequence to textual elements that occur in suitably robust preferred orders" (p. 145). Such argument has been exemplified in some studies where moves seem to appear following a stipulated order such as what was described in Swales' (1990) *Creating a Research Space* (CARS) model based on the moves of research article introductions. Allison and Yang (2003) also reported that the steps that realize a purpose of a move seem to follow the same order. However, some studies found that

the order in which moves and steps appear is not always the same, as sometimes it is not straightforward for researchers to place certain moves and steps in a rhetorical structure of a genre (Samraj, 2002). Also, sometimes a number of moves could appear repeatedly, as what Hopkins and Dudley-Evans (1988) called *cyclical* patterns.

The challenge of establishing an order for moves in spoken genres has been especially highlighted due to the "inherent flexibility of speech genres" (Rowley-Jolivet & Carter-Thomas, 2005, p. 56). For example, Thompson (1994) indicated the variability in terms of the sequencing of moves in her research on the moves of lecture introductions. Similarly, Rowley-Jolivet and Carter-Thomas (2005) found that the position as to the component *outline structure/scope* in conference presentations is fairly unpredictable.

2.2.2 Rhetorical move structure analyses of academic genres

Previous section has provided detailed description of rhetorical move structure analysis. Among the studies that applied such analysis, a majority of them have focused on academic genres. The following section then turns to review the studies on the rhetorical move structures of academic written genres and academic lectures.

2.2.2.1 Rhetorical move structure analyses of academic written genres

Although there has been some research examining rhetorical move structures of academic written genres, such as book reviews (Motta-Roth, 1998), grant proposals

(Connor & Mauranen, 1999), and job application letters (Bhatia, 1993; Henry & Rosenberry, 2001b), the genre that received particular attention is research articles (Cortes, 2013). Swale's (1990) pioneering work described the move structure of research article introductions following the model he proposed, commonly known as the CARS model. This model has laid an essential foundation for the investigation of rhetorical move structure of research articles, giving rise to a plethora of studies exploring such genre based on Swales' model. As such, many frameworks manifesting the move structure of research articles are proposed, based on the identification of rhetorical moves in different sections of research articles by a number of researchers.

Some researchers investigated the move structure of entire research articles, including the sections of introduction, method, result, and discussion (e.g., Cotos, Huffman, & Link, 2015; Kanoksilapatham, 2007; Nwogu, 1997; Zhang, Kopak, Freund, & Rasmussen, 2011). In addition to the four main sections of a research article, some researchers even included the move analysis of the abstract section, such as Tessuto (2015), and Chang and Kuo (2011). Instead of examining the move structure of entire research articles, a number of researchers focused on identifying move structure of specific sections in research articles. For example, Kwan (2006) conducted a move-step analysis focusing only on the literature review section in

dissertations. Both Lim (2006), and Cotos, Huffman, and Link (2017) identified the moves and steps in method sections of research papers. Moreover, Cotos, Link, and Huffman (2016), and Moreno and Swales (2018) described the move-step structure of discussion sections of research articles.

Samraj (2014) indicated that rhetorical move analysis has pedagogical purpose of "articulating the organizational patterns of key academic genres" (p. 391), given that the prototypes of genres identified through move analysis can inform the development of pedagogical materials to help non-native students or novice academically-oriented students become familiar with the organizations of certain academic genres. Given the frequent applications of move analysis on academic written genres, valuable pedagogical insights have been yielded to guide the development of relevant pedagogical materials that aim to enhance students' academic literacy in terms of the rhetorical organization of academic writing.

One of the most renowned materials edited based on such analysis is the volume by Swales and Feak (1994), with new editions published every few years. In the volume, Swales and Feak provided a variety of activities aiming to raise students' awareness of the rhetorical structures of academic genres, especially those in research articles. Suggested activities include asking students to directly analyze move structures of a text, providing students with move-annotated texts, and engaging

students into draft revising tasks based on the genre's move structure (Swales & Feak, 2009). With the help of these exercises, it is believed that students would become aware of "the preferred sequences of moves in genres" and "the textual space ascribed to various moves" (Samraj, 2014, p. 392).

Moreover, several studies have showed the merits of employing the results of move structure analysis to EAP instruction (e.g., Henry & Roseberry, 2001b, Henry, 2007). For example, based on the results of a previous move analysis (Henry & Roseberry, 2001), Henry (2007) designed web-based activities, allowing students to practice identifying move structures and relevant linguistic features of genres, as well as arranging the sequential order of the moves of genres. Cheng (2008) reported students' improvement in terms of disciplinary literacy through exercises involving students in identifying move structures in a writing class. These findings all support what Hyland (2003) claims that "writing instruction will be more successful if students are aware of what target discourses look like" (p. 26).

Previous studies on move structures of academic written discourse, especially research articles, have demonstrated how a rhetorical move structure analysis is conducted and how a genre is characterized. These studies also showed that such analyses could facilitate the learning of academic writing and academic literacy. Such analyses of academic spoken genres should also have the potential to provide some

pedagogical insights into the comprehension of academic spoken discourses. As such, some researchers have investigated the rhetorical structures of academic spoken genres in terms of moves in order to enhance students' academic literacy regarding spoken discourses (e.g., Cotos & Chung, 2019; Lee, 2016; Rowley-Jolivet & Carter-Thomas, 2005). Given the important role of academic lectures in university contexts and because of the lecture discourse being the focus of this study, the following section thus turns to review the key studies which explored rhetorical move structures of academic lectures.

2.2.2.2 Rhetorical move structure analyses of academic lectures

Compared to the studies on academic written genres, only a limited number of studies have explored academic spoken genres in terms of their rhetorical move structures. This might be due to the fact that much greater human force is needed for transcribing spoken data into texts on top of the already labor-intensive process of conducting a move analysis. Moreover, previous studies (Rowley-Jolivet & Carter-Thomas, 2005; Thompson, 1994) have pointed out the messiness of move structures in spoken discourse, possibly due to the spontaneous and on-line nature, which makes investigating move structures of academic spoken genres particularly challenging.

Despite the difficulties, to comprehensively describe rhetorical move structures of academic genres, it is not enough to only focus on written academic genres, but to

include spoken academic ones as well. From a pedagogical perspective, both academic written and spoken genres are important to students in university settings since students would need to master the writing skills for academic written genres as well as be able to comprehend and communicate effectively and appropriately in order to achieve academic success.

As such, there have been some studies focusing on rhetorical move structures of various academic spoken genres, such as conference presentations (e.g., Rowley-Jolivet & Carter-Thomas, 2005), EAP classroom lessons (Lee, 2016), and ITA classroom discourses (Cotos & Chung, 2019). Among the studies that investigated move structures of academic spoken genres, one genre that deserves more attention is the lecture genre, because it remains a primary genre for instruction in university settings (Cheng, 2012; Flowerdew, 1994). University students mainly acquire knowledge in academic lectures to develop their own knowledge base in terms of their own disciplinary or professional fields. Thus, capable of following lectures and comprehending contents could to a great extent determine a student's academic performance. Such task, however, is especially challenging for non-native students, due to the heavy listening comprehension tasks imposing on them (Samraj & Petrovic, 2015).

Previous studies have highlighted the importance of helping students create a mental map when they are trying to comprehend lectures (Thompson, 1994; Young, 1994). Analyses of rhetorical move structure of academic lectures could demonstrate the overall structure of the lecture discourse, which can therefore help students to construct a mental map and make adjustments based on the model before and during listening, thus helping them monitor the structure of lecture. Given the importance of academic lectures for university students and the great help of move structures of academic lectures on non-native students' lecture comprehension, several researchers have examined the rhetorical move structures of academic lectures.

One of the earlier studies on the move structure of academic lectures was Thompson (1994). Using Swale's analytic framework, the researcher examined the rhetorical move structure as well as the linguistic features of academic lecture introductions. She emphasized the importance of identifying the move structure in lecture introductions in that "they offer an opportunity for the lecturer to establish an interpretable framework for the audience to use as they listen to the rest of the lecture" (pp. 174-175). Eighteen lecture introductions from the disciplines of applied linguistics, engineering, and medicine were analyzed in her study. Adopting Swales' genre-based analysis, she identified two main moves and seven steps (what she

referred to as *functions* and *sub-functions*) that can be linked to the communicative purposes of introductions in university lectures.

The two moves identified by Thompson (1994) are *Setting up the Lecture Framework* and *Putting Topic in Context*. The former move provides information related to topic, scope, lecture goals and structure. This move is "essentially metalinguistic", because it creates a "framework or a 'mental map' for the audience to rely upon as they listen to the rest of the lecture" (p. 176). It allows the audience to predict "where the lecture is going, see where one component fits with another and within the whole lecture, and assess the relative significance of each aspect of the lecture" (p. 176). Four steps are further identified in this move, including *Announce topic* (where lecturers provide the audience with the topic or the title of the day's lecture), *Indicate scope* (where lecturers indicate what components will be included and the extent to which each component will be covered), *Outline structure* (where lecturers provide a layout of the lecture sequence), and *Present aims* (where lecturers outline the purposes of the lecture).

The other move identified by Thompson (1994) in academic lecture introductions is *Putting Topic in Context*, which "establishes a context for the content of the lecture by indicating the relevance and importance of the topic and relating it to what the audience already knows" (p. 176). This move also functions to activate the

audience's past knowledge related to the topic. Three steps are included in this move, which are *Show importance/relevance of topic* (where lecturers show the significance of the topic and its place in the audience's world), *Relate "new" to "given"* (where lecturers place the new topic into the context by drawing on the audience's existing knowledge or experience), and *Refer to earlier lectures* (where lecturers provide reference to the previous lectures and help the audience to recall the information mentioned previously).

Thompson (1994) noted that the first move *Setting up Lecture Framework* orients the "lecture-as-object towards the audience", while the second move *Putting Topic in Context* is meant to deal with "lecture-as-content" (p. 178). That is, the former move is to provide an introduction regarding the overall organization of the lecture to the audience, while the latter move is to prepare the audience for the new information that is to be delivered in the lecture. Different from the rather fixed order of the moves in academic lecture introductions, Thompson (1994) noted that the order of steps is comparatively unstable. She thus arranged the order of steps simply based on the frequencies of occurrence of each step.

As one of the earlier research investigating the rhetorical structures of academic lectures, Thompson's (1994) finding is against Swales' (1990) claim that there are "robust preferred orders" of rhetorical move structures (p. 145). In fact, compared to

the rather fixed move patterns usually seen in research articles, Thompson found that the patterns of moves and steps in academic lectures were actually interwoven. Such result is in fact unsurprising since variations of rhetorical move structure are actually expected in spoken genres, as admitted by Swales (1990).

Based on Thompson's (1994) move analysis framework, Lee (2009) also investigated the rhetorical moves of academic lecture introductions, and specifically explored whether class sizes would affect the rhetorical move structures. Drawing on the academic lecture data from the Michigan Corpus of Academic Spoken English (MICASE) (Simpson, Briggs, Ovens, & Swales, 2002), Lee selected ten lectures from four academic divisions, including biological and health sciences, humanities and arts, social sciences and education, and physical sciences, for his move analysis of lecture introductions.

Using Thompson's (2009) framework as a reference for analysis, Lee further identified one more move and its constituent steps in academic lecture introductions in addition to the two moves originally identified by Thompson (1994). The move Lee added to Thompson's (1994) original framework is *Warming up*, which functions as "a 'buffer' to the forthcoming lecture, giving students time to settle in and allowing lecturers to attend to other matters about the course that may or may not be related to the current lecture" (Lee, 2009, p. 47). This move can be realized by three steps:

making a digression, *housekeeping*, and *looking ahead*. *Making a digression* is when lecturers give digressions or asides, or tell anecdotes, which is meant to create a relaxing environment and keep a positive relationship between the audience and lecturers (Crawford Camiciottoli, 2005). *Housekeeping* is when lecturers provide course-related information which is usually reminders of assignment due dates, while *looking ahead* is when lecturers provide information related to future class plans or events, such as change of meeting time or location.

Focusing on describing the rhetorical moves of academic lecture introductions, both Thompson (1994) and Lee (2009) found that the rhetorical moves of academic lecture introductions are hardly presented in a linear sequence, but tend to "progress in a cyclical pattern…with moves and steps overlapping, repeating" (Lee, 2009, p. 49), and sometimes "inextricably bound together in the same stretch of speech" (Thompson, 1994, p. 180). Although academic lectures share some characteristics, especially the generally planned, informational, and instructional nature, with some academic written genres, such as textbooks (Flowerdew & Miller, 1997), they are nonetheless a spoken genre. That is, academic lectures still have some common frequent characteristics of spoken genres, including speakers' real-time processing and online editing. Considered that lecturers need to monitor the information they deliver and give unplanned speech in real time to address unexpected questions from

students, it might thus cause the challenge for lecturers to present information in a linear manner (Lee, 2009).

On the other hand, Cheng (2012) argued that lecture closings are as crucial as lecture introductions to the audience, given that "a strong and powerful ending often stays clearly in the listeners' mind" (p. 234). Cheng focused particularly on the rhetorical moves (what she referred to as "strategies" to emphasize their non-sequential and recurrent nature) in lecture closings. Taking a corpus-based approach, Cheng drew on the academic lecture data in the MICASE, and chose 56 lecture closings from various disciplines for her move analysis. Similar to Lee (2009), Cheng also looked into how lecture size could affect the variations of rhetorical moves. In the 56 lecture closing, 26 closings are from large class lectures and 30 are from small class lectures.

After the analysis, Cheng first divided lecture closings into three stages: *Pre-ending*, *Ending*, and *Post-ending Stages*. *Pre-ending Stage* is when lecturers stop providing new information, but reviewing or summarizing key points mentioned in the day's class, or reminding students with assignments or future course plans. *Ending Stage* is when lecturers explicitly indicate the end of a class. *Post-ending Stage* refers to the ongoing interactions between lecturers and students after lecturers indicate the class has ended.

After each closing was divided into the three stages, Cheng further identified 15 moves, with 12 being teacher's moves and 3 being student's. The 12 teacher's moves include: *indicating the end of lecture*, *asking if students have questions*, *answering students' questions*, *calling for attention*, *coming to a conclusion of lecture content*, *explaining course-related issues*, *dismissing the class or leave-taking goodbyes and wishes*, *indicating the plan for the future*, *explaining non-course-related matters*, *raising questions or issues for discussion*, *summarizing or reviewing key points*, and *responding to students*. The 3 student's moves are: *raising questions about course-related issues*, *raising questions about lecture content*, and *responding to the lecturer*.

Based on the occurrences of each move in different stages, Cheng further categorized them under the three stages. It should be noted that since Cheng maintains that moves are non-sequential and recurrent in nature, overlapping moves can be found to appear in different stages. Moreover, despite the many moves identified by Cheng, the comparison of moves appearing across lecture closings has led the researcher to conclude that there is a "lack of typical rhetorical structure of lecture closings" (p. 238). This is similar to Lee's (2009) and Thompson's (1994) findings that there does not seem to be a fixed rhetorical structure in lecture introductions. These similar findings may be due to the fact that academic lectures are a spoken discourse in real time (Cheng, 2012; Flowerdew & Miller, 1997; Lee, 2009;

Thompson, 1994), so the occurrences of online-editing could be quite frequent. Cheng thus concluded that lecture closings, similar to lecture introductions, may not require to "have a fixed or preferred sequence or strategy (move) patterns, in contrast with endings in other academic genres" (p. 239).

Focusing specifically on the rhetorical structure of law lectures, Samraj and Petrovic (2015) investigated the overall rhetorical move structure based on four academic lectures of law, including their part-genres, moves, steps, and sub-steps. Instead of using data that are from ready-made corpora such as the MICASE, their lecture data were obtained through the researchers recording and transcribing the entire classes offered in a university program. The analysis of move structure allowed the researchers to propose a framework of move structure of academic lectures in their entirety. In Petrovic and Samraj's framework, a lecture is divided into three units (or part-genres), which are: content introduction, content development, and session closing.

Following Thompson's (1994) move framework of academic lecture introductions, only two moves are identified in the part-genre of content introduction, which are *setting up the framework* and *contextualizing the lecture topic*. The move, setting up the framework, can be realized by two constituent steps: *announcing the topic of the lecture* and *outlining the lecture structure*. On the other hand, the move,

contextualizing the lecture topic, can be achieved by the steps of *referring to a previous lecture* (where lecturers review previous course content related to the current topic), and *explaining the context* (where lecturers provide information regarding where the topic is applied).

The second part-genre, content development, could be achieved by four moves, which are *announcing the topic*, *defining the topic*, *contextualizing the topic*, and *summarizing the main points*. Among the four moves that could realize this part-genre, *contextualizing the topic* can be further realized by three steps: *describing a legal process*, *explaining a topic*, *applying the topic*. Moreover, the step of *applying the topic* can be further divided into two sub-steps to realize such step, which are *illustrating the topic* and *analyzing the topic*.

It should be noted that although the researchers have divided the law lectures into three part-genres, the last part-genre, session closing, contains no moves or steps. The researchers explained that according to their lecture data, the lecturers usually ended classes by "just a brief stretch of discourse" and announcing matters related to the next session, or simply by "fading out" when lecturers were tending to specific questions proposed by some students while the other students were simply talking with one another (Petrovic & Samraj, 2015, p. 101).

Based on the review of the previous studies that proposed move frameworks of

part-genres of academic lectures, a rough rhetorical structure of academic lectures in terms of moves can be summarized, as showed in Table 1. This can serve as a foundation and a helpful reference for conducting a move analysis of academic lectures.

Table 1. Summarization of the rhetorical move structure frameworks proposed by previous studies (Cheng, 2012; Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994)

Introduction	Thompson (1994)	Lee (2009)	Samraj & Petrovic (2015)
	Introduction	Opening phase	Content introduction
	Move 1: Set up lecture framework	Move 1: Warming up	Move 1: Setting up lecture framework
	Step 1: Announce topic	Step 1: Making a digression	Step 1: Announcing the lecture topic
	Step 2: Indicate scope	Step 2: Housekeeping	Step 2: Outlining the lecture structure
	Step 3: Outline structure	Step 3: Looking ahead	Move 2: Contextualizing the lecture topic
	Step 4: Present aims	Move 2: Setting up lecture framework	Step 1: Referring to the previous lecture
	Move 2: Putting topic in context	Step 1: Announcing the lecture topic	Step 2: Explaining the context
	Step 1: Show importance/relevance of topic	Step 2: Indicating the scope	
		Step 3: Outlining the lecture structure	
	Step 2: Relate “new” to “given”	Step 4: Presenting the aims	
	Step 3: Refer to earlier lectures	Move 3: Putting the topic in context	
		Step 1: Showing the importance of the topic	
		Step 2: Relating “new” to “given”	
		Step 3: Referring to earlier lectures	
Main Body	Samraj & Petrovic (2015)		
	Content development phase		
	Move 1: Announcing the topic		
	Move 2: Defining the topic		
	Move 3: Contextualizing the topic		
	Step 1: Describing a legal process		
	Step 2: Explaining the topic		
	Step 3: Applying the topic		

	Sub-step 1: Illustrating the topic Sub-step 2: Analyzing the topic Move 4: Summarizing the main points	
Ending	Cheng (2012)	
	Pre-ending stage: - responding to the lecturer - indicating the plan for the future - explaining course-related issues - responding to students - asking if students have questions - coming to a conclusion of lecture content	- indicating the end of lecture - summarizing or reviewing key points - calling for attention - raising questions about course-related issues - raising questions or issues for discussion - explaining non-course-related matters
	Ending stage: - dismissing the class or leave- taking goodbyes and wishes - indicating the plan for the future - indicating the end of lecture - explaining course-related issues - asking if students have questions	- responding to the lecturer - answering students' questions - raising questions about course-related issues - explaining non-course-related matters
	Post-ending stage: - responding to the lecturer - explaining non-course-related matters - responding to students - answering students' questions - raising questions about course-related issues	- raising questions about lecture content - calling for attention - dismissing the class or leave taking goodbyes and wishes - coming to a conclusion of lecture content

2.2.3 Summary

This section provides an overall introduction of rhetorical move analysis as well as reviews the key findings based on the studies that applied move analysis. Previous studies have showed that analyses of rhetorical move structures could improve our understanding of academic written genres, and findings of such analyses could also provide pedagogical insights into academic writing (e.g., Swales & Feak, 1994; 2009). Despite the importance of academic writing to academic success, non-native students' ability of understanding academic spoken genres also contributes greatly to their academic performance. A more extensive understanding of academic spoken genres, especially lecture genre, is thus needed. However, only a very limited number of studies have explored lecture genre, especially its rhetorical move structure. Although these studies have contributed invaluable insights to our understanding of the rhetorical moves in lectures, a number of limitations still exist and should be further addressed.

First of all, the number of lectures investigated in the previous studies is rather restricted, such as the ten lectures examined by Lee (2009), and the four lectures examined by Samraj and Petrovic (2015). Second of all, there has been a lack of a framework describing the move structure of academic lectures in their entirety. Nearly all of the existing studies have only focused on the move structures of certain part-

genres of academic lectures, such as Lee (2009) and Thompson (1994) on lecture introductions, and Cheng (2012) on lecture closings. Although Samraj and Petrovic (2015) investigated the move structure of academic lectures in their entirety, their framework in fact only includes detailed moves and/or steps under part-genres of introduction (content introduction) and main body (content development). They did not identify any moves or steps under the last part-genre, session closing. Therefore, strictly speaking, the framework proposed by Samraj and Pertrovic can only be of help for analyzing the first two part-genres, introduction and main body, of a lecture.

Lastly, previous studies have noted disciplinary variations across academic lectures from many aspects such as teaching styles, patterns of class structures, the use of questions, attribution expressions, and lecture functions (e.g., Ädel 2008; Brown & Bakhtar, 1988; Chang, 2012; Deroey & Taverniers, 2011; Dudley-Evans, 1994; Flowerdew & Miller, 1995; Neumann, 2001). Certain degree of variation across academic lectures of different disciplines in terms of their move structures is expected. However, such issue has not been considered in the existing studies. They have either investigated academic lectures from a variety of disciplines without considering whether different disciplines may potentially affect the move organization of academic lectures (e.g., Lee, 2009; Thompson, 1994), or focused on only the rhetorical move structure of one discipline without making comparison with other

disciplines (e.g., Samraj & Petrovic, 2015). Moreover, although Samraj and Petrovic (2015) have proposed a move framework for the main body of academic lectures, further examinations are still needed since their framework is based on law lectures. It is likely that there will be disciplinary variations in terms of the move structures to some extent. Further research on such aspect is thus necessary because it can provide pedagogical insights to the questions regarding whether a discipline-specific teacher training, or EAP courses for lecture comprehension, are needed for prospective teachers or EAP students of different disciplinary fields.

2.3 The Present Study

The previous summary in 2.2.3 has pointed out the limitations of the existing studies on the move structures of academic lectures, including the restricted analyses on move structures of certain phases in academic lectures, the underexplored issue of potential disciplinary influence on the move structure of academic lectures, and the limited number of lectures investigated in the existing studies. These issues and limitations have motivated the present study to more extensively research the move structure of academic lectures and to address the issues point by point.

To address the first issue that the exiting studies only investigated the move structure of certain phases, such as lecture introductions (Lee, 2009; Thompson, 1994), and lecture closings (Chang, 2012), the present study thus attempts to analyze the move structure of academic lectures in their entirety. That is, the move structure of entire academic lectures, including the beginning, the main body, and the ending phases are analyzed in the present study. In doing so, a framework of the move structure of academic lectures in their entirety can be generated, which can be further adopted to facilitate EAP teaching and learning, as well as teacher education. For example, EAP students can be taught how academic lectures are rhetorically organized with different moves and learn how to recognize them, which in turn could improve students' lecture comprehension. For teacher education, the proposed move

structure could provide non-native or novice lecturers with an outline to organize their lectures, which could facilitate their lesson-planning process. Also, the proposed move structure can also serve as a reference for future studies on larger-scaled analysis of the move structure of academic lectures.

In terms of the second issue that the existing studies only investigated a very limited number of lectures to generate move structure of academic lectures, the present study thus aims to collect a larger number of academic lectures for the present analysis of move structure. The number of academic lectures for the present analysis is higher than the existing studies, including the eighteen lectures analyzed by Thompson (1994), the ten lectures analyzed by Lee (2009), and the four lectures analyzed by Samraj and Petrovic (2015). With a larger number of lectures analyzed in their entirety in terms of the move structure, this study has the potential to expand the current understanding of the move structure of academic lectures and to demonstrate more details regarding the rhetorical strategies applied by lecturers in academic lectures.

Lastly, the issue that needs to be further addressed is the potential disciplinary variations in terms of the move structure of academic lectures. The existing studies either only focus on rhetorical move structures in lectures of one specific discipline, such as Petrovic and Samraj (2015) on four law lectures, or on lectures from various

disciplines without considering possible disciplinary variations in terms of rhetorical move structures, such as Thompson's (1994) research on eighteen lectures from the disciplines of applied linguistics, engineering, and medicine, and Lee's (2009) research on ten lectures from a variety of disciplines, such as biology, history, psychology, and literature.

However, disciplinary variations have been found in academic written genres in terms of the use of lexical bundles and their discourse functions (Cortes, 2013; Durrant, 2017). Differences across disciplines have also been revealed in academic lectures, in terms of teaching styles, patterns of class structures, the use of questions, attribution expressions, and lecture functions (e.g., Ädel 2008; Brown & Bakhtar, 1988; Chang, 2012; Deroey & Taverniers, 2011; Dudley-Evans, 1994; Flowerdew & Miller, 1995; Neumann, 2001). Whether there are disciplinary variations in terms of move structures across different disciplines should also be further investigated in order to more extensively understand the lecture genre.

To address this issue and explore whether academic discipline could influence the move structure of academic lectures, the present study thus primarily targets on two disciplines, with one from the soft science and the other from the hard science disciplines, to explore whether there are disciplinary variations in terms of move structure of academic lectures. To make the data collection process more objective

and systematic, the present study also established a number of selection criteria for lectures for analysis, such as the length of lecture and the position of lecturer.

Such exploration could provide pedagogical insights into teaching lecture comprehension to EAP students from different disciplinary fields. If the rhetorical move structures in lectures vary greatly across disciplines, EAP teachers may need to take students' disciplinary fields into consideration and provide discipline-specific instructions on lecture comprehension to students of different disciplinary fields.

In addition to examining the lecture genre from a top-down perspective in terms of its overall move structure to improve non-native students' lecture comprehension and knowledge of the lecture genre, frequently-occurring bottom-up linguistic features are as important. Previous studies (Biber & Barbieri, 2007; Biber et al., 2004) indicate that lexical bundles are one of the prevalent, frequently-appearing linguistic features in academic lectures which also play important roles in organizing the lecture discourse by performing a variety of discourse functions. They are also essential to students' listening comprehension (Neely & Cortes, 2009), because they can serve as discourse signals for students to "predict the nature of upcoming ideas and information" (Nesi & Basturkmen, 2006, p. 301) and help students to follow the overall structure of a lecture more easily (Neely & Cortes, 2009; Csomay & Cortes, 2010). Unable to recognize them or understand their functions in lectures could affect

students' overall lecture comprehension (Goh, 2013), as well as influence how successfully they can deal with various language situations in the university context (Biber & Barbieri, 2007). Without doubt, lexical bundles are essential to students' lecture comprehension since they can serve as signals for students to better see the structure of a lecture and organize the received information. It is thus worth examining the frequent lexical bundles in different phases of academic lectures to equip students with linguistic clues so they will be more likely to recognize the lecture structure and construct their own mental map for better lecture comprehension.

Therefore, the present study also attempts to identify the frequent lexical bundles in academic lectures and explores how they help structure different lecture phases. Although there have been some studies on lexical bundles in academic lectures, they mainly focus on the local functions that lexical bundles perform on a sentence level. How they help structure academic lectures in a global level have been underexplored. Thus, the present study also explores the role of lexical bundles in structuring different lecture phases. The finding could have the potential to provide pedagogically useful implication through providing a list of the lexical bundles frequently occurring in different phases. It would be easier for non-native students to recognize the move structure in a lecture after learning the frequent lexical bundles in different lecture phases.

Overall, the present study aims to address the issues of the existing studies on rhetorical move structure of academic lectures as well as explore the role of lexical bundles in structuring academic lectures by analyzing a larger number of academic lectures of different disciplines. In addition to the potential insights the present study could provide into genre analysis of academic lectures, lexical studies on lexical bundles, EAP teaching and learning, and teacher education, moreover, this study may also have the potential to shed light on EMI instruction.

Previous studies on EMI teachers' language use in lectures (Chen, 2017; Gustafsson, 2018) have identified many language functions and rhetorical strategies, such as *clarifying* and *eliciting factual knowledge*, accomplished by a phrase or a stretch of discourse. Some of them are in fact quite similar to the functions of some move/step categories identified, such as the function "clarifying" (Gustafsson, 2018) and the step "explain the topic" (Samraj & Petrovic, 2015), the strategy "explain lesson aim" (Chen, 2017) and the step "presenting the aims" (Lee, 2009; Thompson, 1994), and the strategy "remind students what they should already know, or relate the lesson to prior knowledge" (Chen, 2017), and the step "relating 'new' to 'given'" (Lee, 2009; Thompson, 1994). These parallel examples suggest that the rhetorical functions appearing in EMI lectures and academic lectures are similar to some extent. That is, the move structure identified in the present study may also have the potential

to help EMI teachers to see more potential rhetorical functions in lectures and how they can be rhetorically structured, in turn facilitating EMI teachers' lesson planning.

CHAPTER THREE

METHODOLOGY

The literature review in chapter two has showed the importance of linguistic features and rhetorical move structure to non-native students' lecture comprehension. Together they could help students to construct a mental map of a lecture based on signals of discourse-organizing lexical bundles and their understanding of the overall move structure of the lecture genre. Given the importance of lecture genre in university settings, comprehensive research in terms of its rhetorical move structure and how lexical bundles function to signal the structure of the lecture discourse should be conducted.

In the end of chapter two, several limitations of existing studies have been pointed out, including the limited number of studies exploring rhetorical move structures of academic lectures, the restricted focus on part-genres of lectures, and the lack of studies on disciplinary variations in terms of rhetorical move structures of academic lectures. Such limitations thus motivated the current study. This study aimed to address these issues by adopting Swales' (1990) move analysis framework to analyze the rhetorical move structure of academic lectures in their entirety. Meanwhile, this study also aimed to investigate whether there are disciplinary variations of academic lectures in terms of rhetorical move structures by comparing

the move structures of literature lectures and computer science lectures. Moreover, since previous studies have indicated the important signaling role of lexical bundles in structuring lecture discourse (e.g., Biber et al., 2004; Biber & Barbieri, 2007; Nesi & Basturkmen, 2006), this study would therefore identify lexical bundles that frequently appear in different phases of academic lectures, particularly focusing on how they function to structure the discourse.

There are two sections in this chapter. The first section describes the current corpora for analysis in detail, including the criteria for data selection, the process of data collection, and the construction of the corpora. The second section provides details in terms of how data were processed and analyzed following Swale's (1990) framework of rhetorical move structure analysis, and how frequent lexical bundles were identified and analyzed using corpus tools.

3.1 Description of corpora

To explore the rhetorical move structure of academic lectures and investigate whether there are disciplinary variations of academic lectures in terms of rhetorical move structure, this study has drawn on the academic lectures from the MIT OpenCourseWare and Open Yale Courses websites to construct corpora for the current investigation. On the course homepages of MIT OpenCourseWare and Open Yale Courses, one can have easy access to rich learning resource of a great number of

courses from a wide range of academic disciplines for free, such as class notes, class handouts, and syllabi. More importantly, many of the courses on the two platforms offer complete lecture recordings, which were recorded from authentic classrooms, as well as the corresponding transcripts of lectures for users to browse online or download for later use.

The resource provided by these platforms could be quite beneficial to those who wish to carry out self-learning considering the rich course materials and the wide variety of course topics offered on the two platforms. Also, according to the site statistics of MIT OpenCourseWare, more than 90% of all visitors are self-learners, students and educators from all around the world who claimed benefits of knowledge enhancement and/or learning new teaching methods from the courses. This means that the online open courses could actually be helpful to both teachers and learners, and also have certain degree of influence among users around the world as well.

Meanwhile, the two platforms have also attracted researchers' attention especially those who are interested in exploring lecture discourse. Thus, with the help of the MIT OpenCourseWare and Open Yale Courses websites, there have been several studies conducted to investigate lecture discourse from various aspects, such as exploring frequent linguistic features applying a corpus-based approach (intensifiers, lexical bundles), or non-verbal features (gesture, gaze, prosodic stress)

from a multimodal perspective, (e.g., Crawford Camiciottoli, 2015; Liu, 2019; Liu & Chen, 2020, forthcoming).

In addition to the fact that the lectures are from two distinguished universities in the US, the crucial reason to choose academic lectures from these two platforms is because of the easy access to the lecture recordings and their corresponding transcripts. From a multimodal perspective, Norris (2004) suggested that the combination of digital video recordings of a discourse and its corresponding transcription would allow researchers to better capture the multiplicity of different communicative modes as to how they interact to create meaning in a particular context. Moreover, in terms of analyzing rhetorical move structures, Lee (2016) emphasized the importance of watching lecture video recordings before conducting the coding process of moves. In this way, the analyst may have a clearer idea regarding how a lecture is conducted and would have the opportunities to observe and notice non-verbal clues, such as lecturer's movements and gestures. Such step could help the analyst to identify the discourse function of certain segments and better determine their move categories.

Unlike the move analysis on written discourse where interpreting authors' intention and determining move categories are rather subjective and challenging, considering the clues are solely from the text and discrepancies between analysts' and

authors' understanding of a segment may also exist, with the help of lecture recordings and the corresponding transcripts, it is more likely for analysts to better see speakers' intention and determine move categories more objectively based on the clues observed from lecture recordings. Therefore, the researcher decided to collect and utilize the lecture recordings and their transcripts from the MIT OpenCourseWare and Open Yale Courses websites for the present analysis.

In terms of researching disciplinary variations, the researcher has drawn on the approaches taken by previous studies researching this topic, and evaluated the accessibility of lecture data to facilitate the decision of the target disciplines for analysis. It has been long established that variation exists across academic disciplines, and the different nature of different academic disciplines has also been widely discussed in terms of both written and spoken discourses (Belcher, 1994; Biglan, 1973; Hyland, 2006; Hyland, 2008). Generally, in researching the differences among academic disciplines, disciplines are usually divided into two main fields: hard sciences and soft sciences (e.g., Cortes, 2004; Kashiha & Chan, 2013), or classified into four academic tribes: hard-pure, hard-applied, soft-pure, and soft applied (e.g., Hativa, 1997; Smeby, 1996).

It is quite clear that these classifications demonstrate the very different nature between disciplines of hard sciences and soft sciences. With the taxonomy in mind, a

cross-comparison study of disciplines would usually start with comparing certain features between disciplines of hard sciences and soft sciences, in order to determine whether the contrasting nature of disciplines would contribute to the usage of certain features. For example, Cortes (2004) compared the use of lexical bundles between history (soft sciences) and biology (hard sciences); Cotos and Chung (2019) compared the use of functional language across physics and chemistry (hard sciences), and English (soft sciences). It would be more meaningful to conduct cross-comparisons across different sub-disciplines if discipline has been identified as a factor contributing to the different use/occurrence of certain features. Therefore, many cross-comparison studies on discipline variations usually start with comparing the use of one feature in one or more disciplines from both hard sciences and soft sciences before exploring differences among the sub-disciplines under the same discipline.

As indicated previously, disciplinary variations among lectures of different disciplines have been recognized based on many previous explorations from various aspects (e.g., Ädel 2008; Brown & Bakhtar, 1988; Chang, 2012; Deroey & Taverniers, 2011; Dudley-Evans, 1994; Flowerdew & Miller, 1995; Neumann, 2001). Few if any studies have explored disciplinary variations across academic lectures from the aspect of rhetorical move structure. To approach this rather underexplored issue, it is crucial to conduct a preliminary cross-comparison between disciplines of hard and soft

sciences to determine whether discipline is a factor that could influence the rhetorical move structures in lectures, before comparisons across sub-disciplines could be conducted in future studies. Therefore, the researcher set to choose two disciplines, with one from hard sciences and the other from soft sciences, for the exploratory cross-comparison of rhetorical move structure in lectures.

To decide which two disciplines should be the targets for the current study, the researcher examined the lectures on the MIT OpenCourseWare and Open Yale Courses websites based on several criteria. First, the lectures should be from undergraduate-level courses, considering more undergraduate-level courses are offered on these two platforms, and many graduate-level courses may involve too much discussion among lecturers and students or presentations from students, which may not fit the usually teacher-led nature of the lecture genre. Second, the lectures for analysis should be at the same course level. Third, the selected courses need to have both the video recordings of entire lectures and the corresponding transcription, given many courses on the platforms do not actually provide such resource but class notes and syllabi. Fourth, to ensure the diversity of course topics and avoid potential idiosyncrasies of lecturers, the researcher tried to find two disciplines that have a wide variety of course topics and different lecturers from the hard sciences and the soft sciences. Fifth, the courses were conducted by full-time professors, instead of

teaching assistants or international teaching assistants, to make sure the lectures for analysis were delivered by rather experienced teachers.

Based on the criteria above, the discipline of computer science was chosen as the target for the current analysis representing the hard sciences, because it had met all the criteria and contains the highest number of different lecturers as well as courses that provide both lecture transcripts and lecture recordings. After the target discipline for hard sciences was determined, the researcher then went on determining a discipline to represent soft sciences. Since the courses offered by the MIT OpenCourseWare are mostly from engineering and science fields, the researcher thus turned to examine the courses on the Open Yale Courses website. Although the number and the topics of courses offered on the Open Yale Courses website are rather limited compared to those on the MIT OpenCourseWare, most courses it offers are from the fields of humanities and social science. Among them, literature is the discipline that includes the widest range of courses and has the highest number of different lecturers as well as satisfied all the criteria. Thus, literature was chosen to be the other target discipline for the current analysis.

Finally, ten introductory-level courses conducted by ten different lecturers, with five from computer science and five from literature, met the aforementioned criteria and were considered suitable for data collection for the current analysis. Then,

following Lee's (2016) procedure of data collection, multiple lecture recordings and the corresponding transcripts from the same course were collected from each lecturer. The purpose was to better capture the general way each lecturer conducts a lecture. Watching multiple lecture recordings of the same lecturer would help the researcher to better see how a lecturer conducts a lecture, interpret her/his intention, and identify the move structure. Instead of randomly choosing one lecture out of a lecturer's lectures, one's teaching style might emerge or be observed more easily if multiple lectures conducted by the same lecturer are viewed.

The researcher then selected three lectures out of each of the ten courses delivered by the ten lecturers by applying the following criteria. The researcher ensured that the three lectures delivered by each lecturer were selected from the earlier, the middle, and the later parts of the course, and each lecture should focus on different topics. It should also be noted that the lectures selected for analysis were not from a series of lectures of the same topic. Even if one has the same topic as other lectures, the researcher ensured that the selected one was the first one of the series. Also, the lectures selected for analysis were not the first lectures of the courses, since teachers usually spend much time giving overall course introduction and requirements in the first lecture, and the move structure is likely to be very different from the one of a regular lecture. In addition, when selecting lectures for the analysis, the researcher

also tried to select the lectures that have similar length.

In the end, a total of thirty lectures were selected and collected to form the corpora for the current analysis, with fifteen of them delivered by five different lecturers of computer science focusing on fifteen different topics, and fifteen lectures from five literature courses conducted by five lecturers on fifteen different topics. To facilitate later data analysis, both lecture transcripts and lecture video recordings of the 30 lectures were downloaded from the source websites. The lecture transcripts were saved in individual word document for later annotations. The videos were also downloaded in .mp4 format to facilitate further analysis.

After the data collection process was completed, the researcher constructed two lecture corpora, with one containing fifteen literature lectures (literature corpus) and the other including fifteen computer science lectures (CS corpus). The thirty lectures were delivered by ten different lecturers, with eight male and two female lecturers. All of the ten lecturers are full professors. These lectures were delivered between 2007-2016 and the length of each lecture is about 50 minutes. The lectures included in the two lecture corpora are regular class meetings. That is, they are not delivered specifically for online courses.

The literature corpus contains 95,457 words and the total word count of the CS corpus is 104,687 words. The average word count of a literature lecture is 6,363.8

words and that of a computer science lecture is 6,979.1 words. The total number of hours of the lectures in the literature corpus and the CS corpus is about 25 hours. Table 2 presents the details of each of the lectures included in the two lecture corpora in terms of the names of lecturers, the names of the courses, the total numbers of lectures in each course, lecture topics, and the numbers of words of each lecture.

Table 2. Description of the corpora

Computer science			
Lecturer	**Course name/ Total number of lectures**	**Topic of Lecture**	**Word count**
Demaine	Introduction to Algorithms (24)	Lecture 2: Models of Computation, Document Distance	7,386
		Lecture 13: Breadth-First Search (BFS)	6,866
		Lecture 23: Computational Complexity	7,100
Devadas	Introduction to Algorithms (24)	Lecture 5: Binary Search Trees, BST Sort	6,988
		Lecture 11: Integer Arithmetic, Karatsuba Multiplication	5,686
		Lecture 15: Single-Source Shortest Paths Problem	7,076
Grimson	Introduction to Computer Science and Programming (24)	Lecture 3: Common Code Patterns: Iterative Programs	9,155
		Lecture 8: Complexity: Log, Linear, Quadratic, Exponential Algorithms	9,108
		Lecture 15: Abstract Data Types, Classes and Methods	8,480

Guttag	Introduction to Computational Thinking and Data Science (15)	Lecture 4: Stochastic Thinking	5,988
		Lecture 8: Sampling and Standard Error	5,685
		Lecture 13: Classification	6,043
Winston	Artificial Intelligence (23)	Lecture 2: Reasoning: Goal Trees and Problem Solving	6,063
		Lecture 10: Introduction to Learning, Nearest Neighbors	6,646
		Lecture 21: Probabilistic Inference I	6,417

Literature

Lecturer	**Course name/ Total number of lectures**	**Topic of Lecture**	**Word Count**
Dimock	Hemingway, Fitzgerald, Faulkner (25)	Lecture 4: Fitzgerald's The Great Gatsby	6,141
		Lecture 10: Hemingway's To Have and Have Not	6,600
		Lecture 22: Faulkner's Light in August	6,632
Fry	Introduction to Theory of Literature (26)	Lecture 4: Configurative Reading	7,272
		Lecture 9: Linguistics and Literature	6,873
		Lecture 17: The Frankfurt School of Critical Theory	6,510
Hammer	Modern Poetry (25)	Lecture 2: Robert Frost	5,447
		Lecture 10: T.S. Eliot	5,144
		Lecture 19: Wallace Stevens	5,145
Hungerford		Lecture 5: Vladimir Nabokov, Lolita	7,072

	The American Novel Since 1945 (26)	Lecture 13: Toni Morrison, The Bluest Eye	6,296
		Lecture 22: Edward P. Jones, The Known World	6,860
Rogers	Milton (24)	Lecture 5: Poetry and Marriage	6,815
		Lecture 11: The Miltonic Simile	6,732
		Lecture 23: Samson Agonistes	5,927

It should be noted that the differences in terms of the numbers of words among lectures are marked in some cases, despite the similar length of class time. It is very likely that lecturers' individual idiosyncrasies did play a part in dictating the number of words produced in each lecture. For example, there are 9,155 words in Grimson's first lecture while Hammer's second lecture only contains 5,144 words. As Connor and Mauranen (1999) indicated, a move/step may be realized ranging from a few sentences to several paragraphs. It is very likely that different lecturers could produce discourses of very different lengths to fulfill the same move/step in lectures. The primary focus of the current study is on the occurrences of different types of move and step in the literature and computer science lectures. Therefore, the different numbers of words across lectures might only have a rather little influence on the current analysis. In terms of the identification of the frequent lexical bundles in different lecture phases, it should be noted that a longer lecture does not necessarily guarantee longer beginning, main body, or ending phases. Therefore, the different lengths across lectures in the corpora would be rather unlikely to influence the

identification of frequent lexical bundles as well.

While the two lecture corpora were constructed to represent the lecture genre, it must be admitted that it was not possible for them to achieve the desired degree of representativeness, which is often the case for small-scaled rhetorical move analyses (Lee, 2009; 2016). As this study is rather exploratory in nature, this study would focus on describing and generating a preliminary rhetorical move structure of lectures in their entirety as well as exploring potential disciplinary variations, in order to serve as a reference for larger-scaled rhetorical move analyses in the future.

3.2 Data Analysis

To extensively characterize a genre, it is better to apply both top-down and bottom-up approaches, as what previous studies usually did (e.g., Lee, 2009; 2016). According to Biber, Connor, and Upton (2007), top-down approach traditionally focuses on exploring "linguistic features beyond the sentence" (p. 240). The purpose of this approach is to identify discourse structure and text organization, and describe how they are realized linguistically, such as the analysis of rhetorical move structure. On the other hand, bottom-up approach is "fundamentally corpus-based" (p. 241), which can be applied to analyze a large collection of texts. This approach focuses on linguistic patterns existing across a large number of texts, with an aim to producing frequency counts for the entire corpus so frequent linguistic patterns can be identified,

such as frequent lexical bundles or discourse markers.

Both top-down and bottom-up approaches have their merits and challenges. By applying a top-down approach, a more detailed and comprehensive text organization can be obtained, while common linguistic patterns can be identified automatically with the help of corpus analysis tools through a bottom-up approach. To more extensively analyze the current lecture data and characterize lectures as a genre, the researcher took both the top-down and bottom-up approaches for the current analysis. From a top-down perspective, the researcher adopted the Swalesian framework (1990) of genre analysis to investigate academic lectures by analyzing the rhetorical move structure in their entirety. On the other hand, from a bottom-up perspective, a corpus-based approach was taken to identify the frequent lexical bundles appearing in different phases of academic lectures. How they help to structure the lecture discourse would also be discussed. The following section describes the details regarding how the two main analyses were carried out in the present study.

3.2.1 Analysis of rhetorical move structure of academic lectures

Although there have been many studies on move structures, there has not been a standard procedure that all researchers follow to conduct a rhetorical move analysis. Connor et al. (2007) put forth a framework which provides clear principled guidelines in terms of how to describe and identify moves and steps of a genre. Although their

framework was originally created for computer-aided automatic move tagging, it nonetheless provides general guidelines informing researchers how a rhetorical move analysis can be conducted. Ten steps are included in Connor et al.'s framework regarding the steps of conducting a move analysis (p. 34):

1. Determine rhetorical purposes of the genre.
2. Determine rhetorical function of each text segment in its local context; identify the possible move types of the genre.
3. Group functional and/or semantic themes that are either in relative proximity to each other or often occur in similar locations in representative texts. These reflect the specific steps that can be used to realize a broader move.
4. Conduct pilot-coding to test and fine-tune definitions of move purposes.
5. Develop coding protocol with clear definitions and examples of move types and steps.
6. Code full set of texts, with inter-rater reliability check to confirm that there is clear understanding of move definitions and how moves/steps are realized in texts.
7. Add any additional steps and/or moves that are revealed in the full analysis.

8. Revise coding protocol to resolve any discrepancies revealed by the inter-rater reliability check or by newly ‘discovered’ moves/steps, and re-code problematic areas.
9. Conduct linguistic analysis of move features and/or other corpus-facilitated analyses.
10. Describe corpus of texts in terms of typical and alternate move structures and linguistic characteristics.

Connor et al. (2007) indicated that a move analysis typically starts with the researcher reading the target text multiple times to see the overall structure of the text and evaluate the function of each text segment and its local purpose to identify the boundaries between moves. It was also noted by Connor et al. that multiple readings and reflections of the texts are required before clear move categories emerge.

In addition to following Connor et al.’s (2007) suggestions regarding identifying general structure of text and determining boundaries between moves, the researcher also followed Lee’s (2016) suggestion of watching the target lecture videos for analysis before starting reading and annotating the corresponding transcripts. Lee maintained that such step would allow the researcher to actually see and hear how lecturers were making transitions in lectures, and to observe topic shifts achieved by physical movement (e.g., writing on the blackboard) or non-verbal features (e.g.,

gestures). By doing this, it would also be easier for the researcher to divide individual lecture transcripts into the phases of beginning, main body, and ending. Therefore, the researcher followed Lee's suggestion and watched the entire lecture videos before moving on to read and divide the lecture transcripts into phases.

More specifically, how the researcher analyzed a lecture transcript was as follows: firstly, before starting marking any annotations to the corresponding transcript, the researcher had finished watching the video of the lecture for analysis. When watching the lecture video, the researcher also took notes on the transcript to help the segmentation later. For example, lengthy pauses might signal topic changes. By watching the lecture videos and noting these paralinguistic features that could not be seen from plain texts, it better helped the researcher to segment the lecture into different phases as well as to understood the functions the lecturer was trying to achieve with both language and non-verbal features.

Before moves and steps were identified, the lecture transcript had first been divided into three main phases: beginning, main body, and ending. When the researcher divided the lectures into three phases, the criteria used by Lee (2016) in identifying boundaries between lesson phases were also adopted to facilitate the segmentation process (p. 102):

1. Explicit linguistic reference to lesson shift

2. Changes in prosody plus physical movements
3. Lengthy pause plus a discourse marker (e.g. okay) produced with a falling tone
4. Lengthy pause plus non-verbal behavior (e.g., gesture, shuffling paper)

By using the criteria and watching the lecture video, the researcher was able to identify the boundaries and divided the lecture transcript into three parts representing the three phases (i.e., beginning, main body, ending). When the researcher had trouble determining the boundaries, she reread the transcript and checked the lecture video again for segmenting the transcript into phases more properly. The same process was repeated until the twenty lecture transcripts were segmented into three phases.

In some cases, the boundaries between phases were not that clear. As such, the lecture videos in fact played an essential part in that they provided other non-verbal criteria for the researcher to identify the boundaries. For example, sometimes lecturers would move from the center of the stage to the side of the room to display information or slides from a computer, which often suggests that they are going to move on to the next topic. Other times, there would be a lengthy pause accompanying with the lecturer looking around the class, as a way to make sure that students have no questions, before the lecturer could start a new topic. As such, Lee's (2016) criteria and the lecture videos allowed the researcher to separate the thirty lectures into the

three phases of beginning, main body, and ending before more detailed move/step category identification were carried out.

After the three phases of all the lectures were identified, the researcher followed the frameworks proposed in the previous studies on move structure of academic lectures (Cheng, 2012; Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994), as presented in Table 1, and Connor et al.'s (2007) guidelines of conducting a rhetorical move analysis to analyze and identify the recurrent move and step categories in the literature corpus and the CS corpus.

The coding process involved reiterative reading of the lecture transcripts, which was a recursive process where the researcher read each lecture transcript and coded its moves and steps. One transcript was reread and recoded multiple times until all the move and step categories appearing in the transcript were identified. The annotation of the current transcripts was conducted manually in their electronic form, instead of using a tagging system. As the real-time nature of spoken discourse is likely to produce embedded move structures (Thompson, 1994), if a tagging system is used to assign each segment to one move/step category, as how one usually works, the potential rhetorical flexibility may not be able to be captured (Bhatia, 1993). In some cases, one sentence could contain more than one move/step, so in MS Word, the researcher thus coded them using the "comment" function for annotation and for

recording the overlapped moves/steps, as showed in Figure 1.

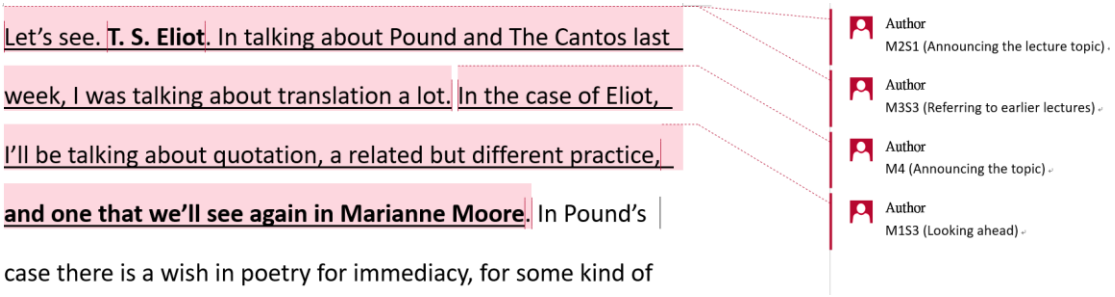

Figure 1. An example of annotating moves/steps in MS Word

Before the whole data set was coded, the researcher had completed an initial pilot coding. As Connor et al. (2007) suggested that pilot coding is needed in order to fine-tune the coding protocol, two lectures from literature and computer science were randomly chosen from the corpora for the pilot coding. This step is especially necessary to the present study in that the move and step categories of lecture introductions and closings were identified by previous studies based on lectures of various disciplines (Cheng, 2012; Lee, 2009; Thompson, 1994), but those of the main body of lectures were identified based only on lectures of law (Samraj & Petrovic, 2015). It is likely that the moves and steps identified in law lectures would differ from those in lectures of other disciplines to some degree. To ensure the move and step categories could be applied to analyze the move structures of the current literature and computer science lectures, a pilot coding was thus necessary. The pilot coding is expected to help the researcher to make some revisions on the moves and step categories if differences are found, and to further fine-tune the definitions of move

and step categories to code the rest of the transcripts more properly.

In the initial pilot-coding process, the researcher mainly based on the move and step categories identified in the previous studies to analyze the two lecture transcripts randomly selected from the literature and the CS corpora respectively. More specifically, the researcher adopted Thompson's (1994) and Lee's (2009) move frameworks of lecture introductions as references to analyze and identify the move and step categories in lecture transcripts of the beginning phase. Samraj and Petrovic's (2015) framework was mainly utilized for analyzing the phase of the main body. For the ending phase, Cheng's (2012) framework was used to identify move and step categories.

After the initial pilot coding, based on the occurrences of discrepancies and the emergence of new move/step categories, the researcher made some revisions to the existing move frameworks (i.e., Cheng, 2012; Lee, 2009, Samraj & Petrovic, 2015; Thompson, 1994). Based on the revised working protocol, the researcher then coded the rest of the lecture transcripts in terms of their moves and steps. It should be noted that the coding process was recursive in nature because new move/step categories could emerge as more lectures were coded. Therefore, the framework would not be complete until the last lecture had been coded.

During the annotation process, many more additional move/step categories had

been identified. Therefore, the framework used as the coding protocol for the present study actually contain move categories of the modified ones from the existing move frameworks (i.e., Cheng, 2012; Lee, 2009, Samraj & Petrovic, 2015; Thompson, 1994), and the move categories identified additionally in the current study, as displayed in Table 3.

Table 3. The move framework as the coding protocol of the current study

Moves	Steps
BEGINNING	
M1: Warming up	S1: Making a digression
	S2: Housekeeping
	S3: Looking ahead
	S4: Getting started / Greeting
M2: Setting up lecture framework	S1: Announcing the lecture topic
	S2: Indicating the scope
	S3: Outlining the lecture structure
	S4: Presenting the aims
M3: Putting the topic in context	S1: Showing the importance of the topic
	S2: Relating “new” to “given”
	S3: Referring to earlier lectures
M4: Asking probing question or raising issues for discussion	
M5: Showing topic interest	
MAIN BODY	
M6: Announcing the topic	
M7: Showing future course plan or lecture outline	
M8: Defining the topic	
M9: Describing the purpose	
M10: Showing topic relevance	
M11: Telling asides or anecdotes	
M12: Contextualizing the topic	S1: Describing the topic
	S2: Explaining the topic
	S3: Interpreting the topic
	S4: Applying the knowledge
	S5: Demonstrating the process
	S6: Highlighting important information
	S7: Referring to/reading the text
M13: Evaluating the topic and arguing for a viewpoint	
M14: Referring to content discussed in previous lectures	
M15: Interacting with students	
M16: Summarizing the main points	

M17: Pep talk	
M18: Reminding students of course-related information	
ENDING	
M19: Concluding the lecture	S1: Summarizing the content of the lecture
	S2: Indicating the end of a lecture
M20: Cooling down	S1: Looking ahead
	S2: Housekeeping
	S3: Addressing non-course related matters
M21: Farewell	

Overall, the coding protocol contains a total of twenty-one moves and twenty-three steps. Compared to the move frameworks proposed by the previous studies (i.e., Cheng, 2012; Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994), this study has added two additional moves and one step to the beginning phase, nine additional moves and four steps to the main body phase, and further proposed a new framework of lecture endings through extensively revising Cheng's (2012) framework of lecture closings, including revising her move-only framework into a dual-scheme framework of moves and steps, and adding new moves and steps.

More particularly, in the beginning phase, a new step, *getting started*, was added to move 1 to specify lecturers' greeting and explicitly indicating the start of the class, which was actually 'borrowed' from Lee's (2016) move framework of EAP classroom lessons. Two additional moves were also identified in this phase, which are move 4 (*asking probing question or raising issues for discussion*) and move 5 (*showing topic interest*).

In the main body phase, the researcher kept the four moves and three steps identified by Samraj and Petrovic (2015), but she revised move 3 step 1 *describing a legal process* into *describing a topic*, to better fit the current data. Also, to keep the current move framework a move-step dual scheme, the researcher collapsed the two sub-steps *illustrating the topic* and *analyzing the topic* of the step *applying the topic* in Samraj and Petrovic (2015) into one step *applying the knowledge*. Moreover, additional nine moves and four steps were further identified and included in the current coding protocol, which are: move 7 (*showing future course plan or lecture outline*), move 9 (*describing the purpose*), move 10 (*showing topic relevance*), move11 (*telling asides or anecdotes*), move 13 (*evaluating the topic and arguing for a viewpoint*), move14 (*referring to content discussed in previous lectures*), move 15 (*interacting with students*), move 17 (*pep talk*), move 18 (*reminding students of upcoming assignment*), move 12 step 3 (*interpreting the topic*), move 12 step 5 (*demonstrating the process*), move 12 step 6 (*highlighting important information*), and move 12 step 7 (*referring to/reading the text*).

As for the coding protocol of the ending phase, it should be noted that the coding protocol for the current ending phase is quite different from Cheng's (2012) framework of lecture closings which contains three stages (pre-ending, ending, and post-ending) and twelve teacher's moves. Originally, this study aimed to base on

Cheng's (2012) move framework to help identify the move/step categories in the ending phase of the current lectures. However, the present study did not identify as many moves (or *strategies* as termed by Cheng) in the current lectures as Cheng did in her data, which is probably due to the rather limited corpus of the ending phase in the current study. Also, considered that the present study aimed to investigate the move structure of entire lectures, the pre-ending stage in Cheng's framework could in fact be considered part of the main body phase. The researcher thus decided not to adopt Cheng's three-stage classification of lecture closings in the present study.

Moreover, another issue with Cheng's (2012) framework is that it actually does not include any "steps". To provide a more detailed framework in terms of how moves are realized by different steps with different communicative purposes, the researcher further referred to the move structure of the closing phase proposed by Lee (2016) based on EAP classroom lessons to facilitate the current analysis. Finally, based on what was identified in the current data as well as the move frameworks in the closing phases identified in Cheng (2012) and Lee (2016), a revised framework of the ending phase was proposed by the present study.

Particularly, some moves identified by Cheng (2012) were revised into steps to form a general move and some moves and steps proposed by Lee (2016) were adopted to illustrate the move structure of the ending phase in the current lectures. More

specifically, move 19 step 1, *summarizing the content of the lecture*, is a combination of Cheng's (2012) move categories of *coming to a conclusion of lecture content* and *summarizing or reviewing key points*. The category *dismissing the class or leave-taking goodbyes and wishes* in Cheng (2012) has been further divided into two steps in the current protocol: move 19 step 2 (*indicating the end of a lecture*) and move 21 (*farewell*). Some strategies proposed in Cheng (2012) were given new move/step names following Lee (2016) to better capture the parallel features of moves across phases: *indicating the plan for the future* in Cheng (2012) has been revised into move 20 step 1 (*looking ahead*); *Explaining course-related issues* and *raising questions about course related issues* in Cheng (2012) have been collapsed as move 20 step 2 (*housekeeping*). Move 20 step 3, *addressing non-course related matters*, was also added by the current study to include the similar strategies in Cheng (2012): *asking if students have questions*, *answering students' questions*, and *explaining non-course related matters*.

After the coding of the moves and steps in the lecture transcripts was completed, a second coder was invited to code and analyze a randomly-selected set of lecture data to establish inter-rater reliability (Nunan & Bailey, 2009). Kanoksilapatham (2005) highlighted the importance of inviting experts with relevant disciplinary background for cross-checking the coding of rhetorical moves and steps. The reason behind it is to

avoid potential misinterpretations due to the researcher's unfamiliarity of the lecture tradition of the target discipline. Following Kanoksilapatham's (2005) suggestion, a second coder with a background of computer science was invited for the coding process. The second coder is a current PhD student of computer science and a lecturer who has been teaching related courses in a university in Taiwan for more than six years.

The researcher first explained the coding scheme and the definitions of each move/step to the second coder before he was asked to code the transcripts. The researcher also provided the second coder with examples of different moves and steps to help the second coder better understand how moves and steps realize their purposes in texts. The purpose of inviting a coder with computer science background was mainly to crosscheck the researcher's interpretations of the lecture transcripts of computer science. Therefore, after the coding steps and coding protocol were introduced, the second coder was asked to code a randomly-selected 20% of the total lecture transcripts of computer science. The number of disagreements between the researcher and the second coder was recorded for the calculation of agreement rate. To be considered reliable, Nunan and Baliey suggest that more than 85% agreement between coders is acceptable (2009). The agreement rate between the researcher and the second coder was about 90%. For the codes that the researcher and the second

coder had disagreements with, they discussed the differences and reread the transcripts or watched the lecture videos until consensus was reached.

After the coding process was completed, a move framework containing all the moves and steps identified from all the lectures was generated. The total occurrences of each move and step were also calculated. To determine the conventionality of moves/steps, or their stability (Kanoksilapatham, 2005), the frequencies of each move and step in literature lectures and computer science lectures were recorded respectively. Considering the small sizes of the current corpora and the small number of lecturers, a relatively strict approach was taken, following Lee's (2016) suggestion: a move/step was considered conventional if it appeared in 80% or higher of the lectures, but optional when it occurred in less than 80% of the lectures.

Based on the frequencies of the moves and steps, conventional and optional moves and steps of the two disciplinary corpora were then identified. The conventional and optional moves/steps included in the two disciplinary lectures were then compared to examine whether there are disciplinary differences between the move structures of the two disciplines. How the two disciplines differed in terms of move structures were also further discussed.

3.2.2 Analysis of frequent lexical bundles of academic lectures

In addition to rhetorical move analysis, this study also aimed to identify the

frequent lexical bundles and examine how they were used to signal discourse organization in the three main phases of academic lectures. It should be noted that the original purpose of this study did not include a comparison in the use of frequent lexical bundles in the three main phases between the disciplines of literature and computer science, mainly because the limited sizes of the two disciplinary corpora and the rather small number of lecturers may not be able to represent the language use in the two disciplines. Therefore, the researcher primarily focused on the frequent lexical bundles appearing in the three main phases of academic lectures as a whole.

The researcher took a corpus-based approach to identify and analyze the frequent lexical bundles of the current lecture data, because such approach can help identify the frequent lexical bundles based on the frequency of occurrence automatically from a large collection of texts (Connor et al., 2007). To identify the frequent lexical bundles in the three main phases, the three phases from both of the literature and the CS corpora were separated to form three individual corpora, with each containing lecture data from the beginning, the main body, and the ending phases respectively. A summary of the three corpora of lecture phases, including the word count of each phase, percentage of each phase of the total lectures, the mean length of each phase, the standard deviation of each phase, and the range of each phase is presented in Table 4.

Table 4. Summary of the corpora of the three lecture phases

Phase	Tokens	Percentage	Mean	SD	Range
Beginning	12,042	6	401.4	397.5	13-1,491
Main Body	184,169	92	6,140	965.5	4,827-8,771
Ending	3,933	2	131.1	122.3	0-477
Total	200,144	100	6671.5	955.8	5144-9155

After the three corpora of different phases were constructed, the WordSmith Tool 6 (Scott, 2011), a widely-used tool for corpus analysis, were used to identify the 4-, 5-, and 6-word lexical bundles from each of the three corpora of different phases separately. To minimize lecturers' individual idiosyncrasies and to ensure the identified lexical bundles could be considered relatively common in each lecture phase, criteria of both normalized frequency and dispersion rate were applied (Biber et al.,1999; Cortes, 2004; Hyland, 2008; Salazar, 2011). As noted by Biber et al. (1999) and Cortes (2004), the threshold for the identification of lexical bundles is somewhat arbitrary depending on the size of corpus and research purpose. Different cut-off points were set out to identify lexical bundles that are frequent in the three lecture phases.

A normalized frequency cut-off of once per five thousand words was established for four-, five-, and six-word lexical bundles in the beginning corpus. For the main body corpus, a normalized frequency cut-off of once per ten thousand words was established for four-word lexical bundles, and lower frequency cut-offs were established for longer lexical bundles: once per twenty thousand words for five-word

lexical bundles, and once per forty thousand words for six-word lexical bundles. Then, in the ending corpus, a normalized frequency cut-off of once per two thousand words was established.

In addition, a dispersion rate was also applied to avoid speakers' individual idiosyncrasies. In this study, a lexical bundle could be considered frequent in the three corpora respectively if it appeared in above 10% of the total lectures (Hyland, 2008), which had also been checked by the researcher to be conducted by different lecturers. After the lexical bundles that met all the criteria were identified, the researcher further examined the concordance lines of the extracted frequent lexical bundles to see how they structured different phases in the lecture discourse.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter reports on the results of the analysis of the data collected and provides discussion regarding the results. The chapter is divided into three sections. In the first section, an overview of the categories of moves and steps identified in the current data will be presented and examples of all move/step categories are also provided to illustrate how they rhetorically structured the lecture discourse and accomplished the communicative purposes of the genre.

Then, the second section presents the move structures generated based on the CS corpus and the Literature corpus, as well as highlights the conventionality of the move/step categories appearing in the two disciplines. The move structures of the two disciplines are also compared to see whether there are disciplinary differences. Discussions are also provided focusing particularly on the variations in terms of the two move structures.

In the third section, the frequent lexical bundles identified from each of the three lecture phases, which are beginning, main body, and ending, are presented. Their roles in structuring different lecture phases are also discussed.

Through presenting the results of the current analysis and discussing the implications of the findings, this chapter attempts to provide a more extensive move

framework to illustrate the moves in academic lectures, to generate and compare the move structures of the lectures of literature and computer science, as well as to demonstrate the role of frequent lexical bundles in structuring different lecture phases.

4.1 Move and step categories in academic lectures

In this section, a detailed description of each move/step category identified from the current lecture data is provided, including the ones identified in the previous studies (Cheng, 2012; Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994), as well as the ones added by the present study. The communicative purposes and functions of all the identified categories are described, with examples presented to illustrate how each category structured the lecture discourse and contributed to the overall communicative purposes of lecture genre. The analyses of the moves/steps appearing in the current lecture data are presented in the following three sub-sections representing the three lecture phases of beginning, main body, and ending respectively.

Given the messy and unpredictable nature of step sequence (Thompson, 1994), it should be noted that although the steps in each move are numbered in the present study, the given ordering of steps does not suggest the sequential patterning of steps. Although Thompson (1994) applied ‘frequency’ as the criterion to arrange the step categories in her study, to more clearly show the actual and general sequential order

of move and step categories, this study finally determined to base on the time sequence of the occurrences of the moves and steps to arrange the sequence of the move categories in a more logical way. By doing so, how lectures were organized can be displayed more clearly.

4.1.1 Move and step categories in the beginning phase

Table 5 presents the move structure of the beginning phase, and the frequency and the percentage of each move/step identified in this phase based on the current lecture data. The frequency shows how many lectures each move/step category appeared in. Note that the frequency is based on the total number of lectures collected, which is 30.

Table 5. Move structure of the beginning phase based on the current lecture data

Moves/Steps	Frequency (%)
M1: Warming up	
S1: Making a digression	4 (13.3)
S2: Housekeeping	4 (13.3)
S3: Looking ahead	13 (43.3)
S4: Getting started / Greeting	3 (10)
M2: Setting up lecture framework	
S1: Announcing the lecture topic	29 (96.7)
S2: Indicating the scope	9 (30)
S3: Outlining the lecture structure	11 (36.7)
S4: Presenting the aims	9 (30)
M3: Putting the topic in context	
S1: Showing the importance of the topic	11 (36.7)
S2: Relating "new" to "given"	15 (50)
S3: Referring to earlier lectures	19 (63.3)
M4: Asking probing question or raising issues	5 (16.7)
M5: Showing topic interest	3 (10)

Five moves were identified in this phase, including *warming up*, *setting up the lecture framework*, *putting the topic in context*, *asking probing questions or raising issues for discussion*, and *showing topic interest*. The first three moves, *warming up*, *setting up the lecture framework*, *putting the topic in context*, were also identified in the previous studies in lecture introductions (Lee, 2009; Thompson, 1994). However, the present study identified two additional moves in the current data, which are *asking probing questions or raising issues for discussion*, and *showing topic interest*, as well as an additional step, *getting started/greeting*, in move 1. The following section describes the function of each move and step in this phase, along with the examples from the current data.

The first move, *warming up*, is composed of four steps, which are *making a digression*, *housekeeping*, *looking ahead*, and *getting started/greeting*. This move was originally added by Lee (2009) to Thompson's (1994) framework of lecture introductions. This communicative purpose of this move serve in this phase is for lecturers to warm up the class and/or attend to course-related issues through sharing asides or anecdotes, outlining future course plans, announcing assignment-related information, and/or greeting the student.

The first step of move 1, *making a digression*, is for the lecturers to warm up the class and direct student's attention to the class by telling course-related asides or non-course-related digressions. Crawford Camiciottoli (2005) suggests that this step also allows lecturers to create a positive learning environment in class and build good rapport with their students. This is illustrated in examples 1 and 2:

(1) And Tom Lehrer, if you've never heard of Tom Lehrer, you're missing one of the world's funniest songwriters. And he had a wonderful song called "Oedipus Rex," and I recommend this YouTube as a way to go and listen to it. (C-Gu-01)

(2) A friend asked me the other day, "Are there any happy poets?" Well, of course no, there really aren't, or at least not any that are any good. No, that's not true. (L-Ha-03)

The second step of move 1, *housekeeping*, is for lecturers to attend to course-related matters, such as reminding students of assignments and providing general feedback on students' previous course projects. The function of this step is similar to the *class management* feature identified by Biber (2006) in university lectures where he suggests that this feature is often expressed with the use of modals, as illustrated in examples 3 and 4. In example 3, the lecturer used "would like to" to imply students' obligation to preview the assigned chapter. The lecturer in example 4 used "be going to" to explicitly state the intentions of the course plan.

(3) **<u>On Wednesday, I would like you to come having read</u>** one of Stevens's longer poems. It's not too long but it's a little longer: "The Auroras of Autumn," which is a wonderful poem. (L-Ha-03)

(4) You may notice that **<u>we're not actually going through the book in order</u>**. And **<u>the reason we're not doing that is because</u>** we're trying to get you information you need in time to do problem sets. (C-Gu-01)

The third step, *looking ahead*, specifies the instances as lecturers make announcements regarding upcoming events or exams in future lectures, and/or outline the structure of the course to inform students of the topics to be covered in the future. Considered this step also shares the feature of class management (Biber, 2006), modals and semi-modals are frequently seen in the discourses that achieve the

communicative purpose of this step, as showed in examples 5, 6, 7 and 8. Modals/semi-modals “will” and “be going to” are particularly frequently used in this step since the discourse is usually associated with plans or events in the future. Moreover, in these examples, it seems that the experienced lecturers purposefully mentioned the information regarding future lectures to directly show the students what to expect in the following lectures, emphasize the importance of recurrent topics, and/or indirectly advise and encourage students to attend the future lectures.

(5) And it's a topic I want to pick up on today, **we're going to do for the next few lectures** (C-Gr-03)

(6) We'll have a lecture today and **another one on Tuesday** telling you about techniques that use, among other things, Newton's method to compute irrational numbers…(C-Dv-02)

(7) and **on Wednesday will** take in the whole of the novel (L-Hu-03)

(8) a related but different practice, and one that **we’ll see again** in Marianne Moore. (L-Ha-02)

The fourth step, *getting started/greeting*, is when lecturers explicitly announce the start of a lecture and/or welcome the student for coming to the class. This step is added by the present study which was not included in both Thompson’s (1994) and Lee’s (2009) frameworks of lecture introductions. In fact, this step was adapted from

the step, *getting started*, in Lee's (2016) framework of EAP classroom lessons. According to Lee (2016), this step is usually realized by "a combination of a discourse marker and greeting" (p. 103) to signal a lesson's official start. Examples 9 and 10 illustrate how this step is realized:

(9) **Hey, everybody.** You ready to learn some algorithms? Yeah! Let's do it. (C-De-01)

(10) **Good afternoon, everybody.** Welcome to Lecture 8. (C-Gu-02)

The second move of the beginning phase, *setting up lecture framework*, is to "establish for the audience a *framework* for listening to the lecture" (Thompson, 1994, p. 180). The fact that this move appeared in all of the current lectures confirms its importance in organizing academic lectures, particularly the beginning phase. The communicative purpose of this move can be potentially realized by four steps, which are, *announcing the lecture topic*, *indicating the scope*, *outlining the lecture structure*, and *presenting the aims*.

The first step of move 2, *announcing the lecture topic*, was actually found to appear in 29 out of the total 30 lectures. This step was considered obligatory in lecture introductions by Lee (2009), as lecturers were found to frequently adopt this strategy to "clearly articulate to the audience the main topic of the lecture and provides them with a preview of the ensuing talk" (p. 48). There are two prominent linguistic

features in this step. One is the use of modals and semi-modals, especially “will” and “be going to”, which specify lecturers’ future intentions. The other one is the use of personal pronouns “I” and “we” to either imply the hierarchical relationship between lecturers and students, or to create friendly and inclusive classroom atmosphere. How the step is realized is presented in examples 11, 12, 13, and 14:

(11) **Today's lecture is about** a brand new data structure…(C-Dv-01)

(12) **What we’re going to talk about today**, is goals. (C-W-01)

(13) Today, of course **I’m going to talk about** The Known World… (L-Hu-03)

(14) So, **today we will talk about** The Bluest Eye. (L-Hu-02)

The second step of move 2, *indicating the scope*, describes when lecturers more specifically highlight the focus of the lecture topic and fine-tune the core of the lecture. This step is often realized by a lecturer providing general ideas regarding the lecture topic and then specifying the points that s/he is going to further focus on in the later talk, as illustrated in examples 15, 16, and 17:

(15) What I want to do today–since we have three lectures on Lolita–**what I want to do today is simply to** begin to open the text for you (L-Hu-01)

(16) This is a signpost related to 6.0002, but **we won't go into too much detail about it. We'd rather** things were certain. (C-Gu-01)

(17) So **we won’t do specific algorithms today. But we’ll** set up the problem.

(C-Dv-03)

The purpose of the third step of move 2, *outlining the lecture structure*, is realized when lecturers provide explicit lecture structure to the audience by clearly stating the sequence of the topics or the points s/he will be covering in the talk. This step can potentially help students to construct a relatively clear lecture structure for listening to the rest of the lecture and to know what to expect for the ensuing talk, as showed in examples 18, 19, and 20.

(18) and I want to spend a minute or two **in the beginning** talking about the lay of the land. **And then** we'll race through some material on nearest neighbor learning. **And then** we'll finish up with the advertised discussion of sleep. (C-W-02)

(19) OK. What we're going to do today is…to start creating two things…**and secondly** we're going to talk about tools you can use to help understand those pieces of things. (C-Gr-01)

(20) And what I'd like to do today–this is basically **the outline for today's lecture**–is to take the terminology from Maxwell Perkins–"vagueness"–and add a slightly more formal term and also stretching it a little bit...And I'd like to tease out some of the attributes or manifestations of the counter-realist mode of writing. (L-D-01)

Yet, the step, *outlining the lecture structure*, was only identified in about one-third of the lecturers, which is relatively uncommon. This result is similar to Lee's (2009) result where he also found such step to be optional in lectures. Interestingly, the video recordings of the current lectures allowed the researcher to propose a plausible explanation regarding the low occurrences of this step. Through watching the lecture recordings, it was found that many lectures actually did write down the day's agendas or topics to be covered on the blackboard or directly showed the information on a PowerPoint slide, which may be considered outlines for students. Therefore, lecturers might tend not to further address the outline of the lectures, considered the information regarding lecture outlines had been displayed.

The fourth step of move 2, *presenting the aims*, specifies the instances when lecturers present the goals that the lecture is expected to achieve. Although this step was only found to be realized verbally in nine lectures, as mentioned previously, it was found through the lecture recordings that actually many lecturers did write down the agendas/plans of the day's lecture on blackboards. With the aims written on blackboards, the lecturers might therefore not have the tendency to repeat the information to the audience. Interestingly, some lecturers did refer back to the written aims during the lectures every now and then as they reminded the audience of what had been covered and what was to be addressed next. It seems that the lecturers also

used this strategy to focus the students' attention to the lecture structure as well as to keep track of the topics covered and the ones to be covered for themselves. Examples 21 and 22 present how aims are presented in the current lectures:

(21) **<u>What we're going to do today is</u>**, we're going to start now building up, beyond just these pieces…(C-Gr-01)

(22) And **<u>what I'd like to do today</u>**…is to take the terminology from Maxwell Perkins–"vagueness"–and add a slightly more formal term and also stretching it a little bit. (L-D-01)

The third move in the beginning phase, *putting the topic in context*, is a rhetorical movement that establishes a "context within which to place the new topic" (Thompson, 1994, p. 180) and "prepares the listeners for understanding the new information that will be presented in the lecture and for activating students' existing knowledge of the lecture's topic" (Lee, 2009, p. 49). The communicative purposes of this move can be potentially realized by three steps, including *showing the importance of the topic*, *relating "new" to "given"*, and *referring to earlier lectures*.

The first step of move 3, *showing the importance of the topic*, usually occurred as the lecturers emphasized the importance of a topic, which was identified in more than one-third of all the lectures. This move is potentially associated with successful lecture delivery and comprehension (Brown & Bakhtar, 1988; Flowerdew, 1994),

because “marking importance helps them (students) discern the big picture when processing the complex lecture message online and taking notes” (Deroey, 2015, p. 51). It seems that the lecturers also used this strategy to focus students’ attention through giving reasons to demonstrate why something was of great importance. Examples 23, 24, 25, and 26 illustrate how importance is emphasized:

(23) because **one of the things that you want to do as a good designer** is to basically map a new problem into a known domain…(C-Gr-02)

(24) That is a technique that most shortest path algorithms, or actually all shortest path algorithms use to get efficient complexity. So asymptotic complexity is **important**, obviously. (C-Dv-03)

(25) **This is going to be an important** question for us as we think about what happens to Lolita over the course of the novel. (L-Hu-01)

(26) So **that’s very important** to consider this, that while Christianity is very, very important in this novel, but **it’s very important to** remember that... (L-D-03)

The second step of move 3, *relating “new” to “given”*, is the strategy that lecturers employed to connect new topic or concepts with what was known by the students, or to draw on “shared knowledge or experience” (Thompson, 1994, p. 178), as illustrated in examples 27, 28, and 29.

(27) **Think about political polls**. Here was an interesting poll. How were these created? (C-Gu-02)

(28) you all **learned** how to integrate **in high school** (C-W-01)

(29) Let's see the way in which the satyr **has been reactivated, and picked up and reincarnated in the twentieth century**. Here is someone with the ears of a satyr. We call them Vulcan's ears, but looking exactly like the ears of a satyr. (L-D-03)

This strategy was also found in EMI teachers' lectures where it was used to activate students' prior knowledge (Chen, 2017). By relating the new concept with the ones that the students are already familiar with, it would be easier for the lecturers to introduce the new topic to the students, and help the students to reorganize their knowledge base.

The third step of move 3, *referring to earlier lectures*, is signaled by lecturers' discourse regarding reminding students of the topics that were covered in previous lectures, and what the lecturers and the students did then. This step is also signaled by direct references to the previous lecture (Thompson, 1994), such as "last lecture" and "last time". Although only appearing in 63.3% of the current lectures, this step was considered an obligatory step in Lee's (2009) study on lecture introductions. Examples 30, 31, 32, and 33 present how this step is realized:

(30) **What have we actually done over the last few lectures**? And I want to suggest that **what we've done** is… (C-Gr-01)

(31) The kind of problem solving you'll see today is like generating tests, **which you saw last time**. (C-W-01)

(32) **I ended my last lecture on** Paradise Regained with the brief consideration of the riddle of the sphinx... (L-R-03)

(33) **Last time I finished up my lectures on** Wise Blood by trying to draw together three different ways of reading the novel into one interpretative framework…(L-Hu-01)

As mentioned earlier, move 4 (*asking probing question or raising issues for discussion*) and move 5 (*showing topic interest*) were moves emerging from the analysis of the current lectures and were then added by the present study to the existing move frameworks. Move 4 (*asking probing question or raising issues for discussion*), is usually seen before the lecturers started lecturing on a topic, and they raised many questions relating to the topic for students to think about during the class. Such questions are commonly considered as 'content-oriented' questions (Crawford Camiciottoli, 2008), which can "stimulate thought" and "help maintain attention" (Deroey & Taverniers, 2011, p. 4). In some lectures, lecturers tend to discuss the lecture topics with the students regarding how they feel about certain issues before

officially entering the main topic. This step seems to allow the lecturers to implicitly focus the students' attention on certain issues or to guide them to view the topic from different perspectives, or simply to be used as a way for the lecturers to check how much students know about certain topic. Examples 34 and 35 illustrate how this step is realized.

(34) First, I want to ask you though, **what do you think of this so far?** I just want to hear from you. **What are your responses? Who really hates this novel so far? Anybody?** Yes. Okay. **Why do you hate this novel?** (L-Hu-01)

(35) So, **was the natural description a kind of grounding, in that context of disorientation?** That's a very, I think, perceptive take on what he's doing in the novel. Yeah. **What else? What else did you notice?** Yes. (L-Hu-03)

Move 5 (*showing topic interest*) is signaled by the instances when lecturers share their personal viewpoints or their comments on the topic with the students. It seems that the lecturers tried to raise students' curiosity and interests towards the topics and lead the students in the topic through sharing their personal insights of the topic. This strategy is also similar to the lecture function of 'evaluating' identified by Deroey and Taverniers (2011) where lecturers provide students with their own assessments regarding certain topics. Examples 36 and 37 present how this step is accomplished:

(36) The poem **seems unusually self-conscious** about the role that its similes play. (L-R-02)

(37) And **I think that this is actually probably quite common**, the feeling that you know this character better than you know your family members. (L-D-01)

4.1.2 Move and step categories in the main body phase

Table 6 below presents the moves and the steps appearing in the main body phase of the current lectures, along with the frequency and the percentage of each of the moves/steps identified in this phase. The following section further provides descriptions of the moves and steps in this phase, along with their examples from the current data. A total of thirteen moves and seven steps were identified in this phase. The four moves, three steps, and two sub-steps identified by Samraj and Petrovic (2015) all appeared in the current academic lectures as well. In addition to the ones that had been identified in the previous study (i.e. Samraj & Petrovic, 2015), the present study further identified additional nine moves, which are move 7 (*showing future course plan or lecture outline*), move 9 (*describing the purpose*), move 10 (*showing topic relevance*), move11 (*telling asides or anecdotes*), move 13 (*evaluating the topic and arguing for a viewpoint*), move14 (*referring to content discussed in previous lectures*), move 15 (*interacting with students*), move 17 (*pep talk*), and move

18 (*reminding students of upcoming assignment*). Four additional steps, move 12 step 3 (*interpreting the topic*), move 12 step 5 (*demonstrating the process*), move 12 step 6 (*highlighting important information*), and move 12 step 7 (*referring to/reading the text*), were also further identified in the current study based on the current lecture data.

Table 6. Move structure of the main body phase based on the current lecture data

Moves/Steps	Frequency (%)
M6: Announcing the topic	30 (100)
M7: Showing future course plan or lecture outline	20 (66.7)
M8: Defining the topic	20 (66.7)
M9: Describing the purpose	9 (30)
M10: Showing topic relevance	15 (50)
M11: Telling asides or anecdotes	21 (70)
M12: Contextualizing the topic	
S1: Describing the topic	28 (93.3)
S2: Explaining the topic	30 (100)
S3: Interpreting the topic	15 (50)
S4: Applying the knowledge	13 (43.3)
S5: Demonstrating the process	15 (50)
S6: Highlighting important information	16 (53)
S7: Referring to/reading the text	14 (46.7)
M13: Evaluating the topic and arguing for a viewpoint	30 (100)
M14: Referring to content discussed in previous lectures	17 (56.7)
M15: Interacting with students	20 (67)
M16: Summarizing the main points	16 (53)
M17: Pep talk	3 (10)
M18: Reminding students of course-related information	6 (20)

Move 6 (*announcing the topic*) is one of the move also identified in the previous study (Samraj & Petrovic, 2015), which appeared in all of the thirty lectures in the present study. This move always occurred after the lecturers announced the overall topic of the lectures and before talks regarding sub-topics were given. This move

usually occurred multiple times in the main body phase to announce different sub-topics and initiated new move cycles in this phase. Examples 38, 39, 40, 41 and 42 illustrate how topics are announced. Interestingly, some lecturers seemed to prefer to directly state the new topics (38)(39)(40), while others tended to start a new topic by asking 'content-oriented' questions to stimulate thoughts (Crawford Camiciottoli, 2008) as new ideas unfolded (41)(42).

(38) **Let's talk about** graph representation. (C-De-02)

(39) And **let's talk about** something completely different, which are Catalan numbers. (C-Dv-02)

(40) **Let me begin, then, with** my abstract question, and it really comes from the title of the book, The Known World. (L-Hu-03)

(41) And **I'd like to break that down** a little bit in terms of four interconnected clusters of issues. **One is** to what extent is Harry Morgan a racist?...**The other** question… (L-D-02)

(42) Now, **I want to ask a question** that we're going to need to think about, and addresses the response of…Can we have a moral response to this novel? And what would that look like? (L-Hu-01)

Move 7 (*showing future course plan or lecture outline*), a new move added by the present study, is actually very similar to the functions of move 1 step 3 (*looking*

ahead) and move 2 step 3 (*outlining the lecture structure*) in the beginning phase. This move was employed by the lecturers to provide future plans for the course and/or the plan or outline for the ensuing talk in the main body. This step was usually realized in two situations: either when the lecturers were emphasizing that certain concept would appear again in certain lectures in the future, or when the lecturers were providing rough structures regarding what would be centered on in the following talk, which allowed students to have a general idea regarding what to expect next. Examples 43, 44, and 45 illustrate how this move is realized:

(43) **In unit four of this class, we're going to talk about**, what if we have really giant integers that don't fit in a word? How do we manipulate them? How do we add them, multiply them? So that's another topic. (C-De-02)

(44) **That's what we'll come back to when we turn to** Benjamin's "Work of Art" essay. (L-F-03)

(45) **What I want to do today, for the rest of the time I have left, is** actually talk about augmented binary search tree. (C-Dv-01)

In move 8 (*defining the topic*), the lecturers provided explicit definitions of terms relating to the topic before further detailed explanations were offered. This move was also identified in Samraj and Petrovic (2015) on law lectures. Similar to their findings, since this move usually involves facts or established common knowledge,

this move is often signaled by the use of present tense. For example:

(46) So when we think about nondeterminism in computation, we use the word **stochastic process. And that's** any process that's ongoing in which the next state depends upon the previous states in some random element. (C-Gu-01)

(47) **Metonymy is a selection of signs**, if you will, **that** go appropriately next to each other according to the rules of grammar and syntax and according to the rules of logic… (L-F-02)

Move 9 (*describing the goal*), a new move added by the current study, is similar to move 2 step 4 (*presenting the aims*) in the beginning phase. Different from move 2 step 4 that refers to the general goal of the whole lecture, move 9 in the main body signals specific goals of different sections in a lecture, with each minor goal contributing to the general goal of the lecture. Similar to move 2 step 4, this move only appeared in less than one-third of the total lectures. As mentioned previously, the fact that agendas of the lectures were presented on the blackboards or slides may explain the relatively low occurrence of this move in the main body phase as well. Examples 48 and 49 illustrate how goals are described:

(48) And **our goal is** then to basically see how we can build systems that take advantage of that modularity. (C-Gr-03)

(49) **I want to turn to the novel and look at how** knowledge, especially

knowledge of history, knowledge of the past, is generated. (L-Hu-03)

Move 10 (*showing topic relevance*) appeared in half of the total lectures. Its function is for lecturers to relate the new topic to students' existing knowledge or experience to more effectively focus their attention and help them make connections between what is learned and what is to be learned. This move is in fact very similar to move 3 step 2 (*relating "new" to "given"*) in the beginning phase, with both categories aiming to activate students' prior knowledge or experiences. Examples 50, 51, and 52 present how this step is achieved. The fact that the two strategies sharing similar purposes occur in both of the beginning and main body phases in lectures suggests the importance of such strategies in lectures, and reveals the unpredictable pattern of the occurrence of such strategies in different lecture phases.

(50) And Newton's method is something **you probably learned about in middle school, high school**. (C-De-02)

(51) And those of you, **who have taken double 05**, you know about design amendments. (C-Dv-01)

(52) So, **if you read Harriet Beecher Stowe** for example, **if any of you have taken English 127a and have read that novel**, you'll remember… (L-Hu-03)

Lecturers in about 70% of the current lectures were found to tell asides or

anecdotes to students, which is realized by move 11 (*telling asides or anecdotes*), a move added by the present study. This move was found to often appear after the lecturers announced the topic. Asides are considered an important interpersonal feature in lectures, for it contributes greatly to the global coherence of lectures and can be an "effective discourse strategy for stepping back and gaining new and/or greater perspective". (Strodt-Lopez, 1991, p. 132). That is, asides may in fact bring new insights into the current talk and inspire students to gain new ideas. Moreover, this move also serves the function of facilitating teacher-student relationship and creating a relaxing learning environment (Crawford Camiciottoli, 2005). The multiple functions that asides and anecdotes can serve may explain why this step appeared in 21 out of the total 30 lectures, as it is considered a useful strategy by experienced lecturers to keep their students focused and promote thinking through integrating dense academic knowledge with associated information that is relatively casual. Examples 53, 54, 55, and 56 present the asides and anecdotes appearing in the current data:

(53) **This program…was written by a nearly blind, and subsequently completely blind, graduate student by the name of James Slagle in 1960…**He anticipated so much of the subsequent 20 years, that talking about his program, which is possible in one day, is a miniature introduction to the

whole field. (C-W-01)

(54) Actually, it's kind of funny. **It reminds me of a story.** On the front of my office door, you may have seen there's an email I received, maybe 15 years ago…(C-De-03)

(55) **I discovered this early on in my work and medical area.** There are a lot of diseases that rarely occur, they occur in say 0.1% of the population. And I can build a great model for predicting it by just saying, no, you don't have it, which will be 0.999% accurate, but totally useless. (C-Gu-03)

(56) **Let me just digress here for a moment** and explain to you why I pronounce her name “Dalila” [pron. DA-lee-lah] and not “Delilah” [pron. da-LYE-lah]. (L-R-03)

As the only move in the main body phase to have steps, move 12 (*contextualizing the topic*) consists of seven steps. This move was originally proposed by Samraj and Petrovic (2015) based on their analysis of move structure in law lectures. Four steps, *interpreting the topic*, *demonstrating the process*, *highlighting important information*, and *referring to/reading the text*, were added by the present study. This move, along with its steps, can be considered core to this phase, considering it contributes to one of the main communicative purposes of the lecture genre, *informing* (Deroey & Taverniers, 2011; Thompson, 1994; Young, 1994). Its

importance to the phase can also be seen from its 100% occurrence in all of the current lectures.

Move 12 step 1 (*describing the topic*) was found in 28 out of the total 30 lectures (93.3%). This step appeared when lecturers provided information about the topic. Similar to the subfunctions, *describing* and *recounting*, of the 'informing' function identified by Deroey and Taverniers (2011) based on university lectures, the discourse associated with this step is usually fact-based information or established knowledge, such as historical background, past actions or events, theories, processes, or models. Examples 57 and 58 illustrate the descriptions:

(57) Now this is a mode of belief which in various historical periods, according to Marx, has characterized each dominant class in turn. With the rise of capitalism, the evolution of capitalism into what's called late capitalism, of course this ideology is primarily what's called "the bourgeois ideology." (L-F-03)

(58) An apple falls from the tree because of gravity, and you know where it's going to land. And the world can be understood causally. And people believed this really for quite a long time, most of history, until the early part of the 20th century, when the so-called Copenhagen doctrine was put forth. The doctrine there from Bohr and Heisenberg, two very famous physicists,

was one of what they called causal nondeterminism. And their assertion was that the world at its very most fundamental level behaves in a way that you cannot predict. (C-Gu-01)

The second step of move 12, *explaining the topic*, also appeared in all of the current lectures, suggesting the importance of this step in realizing the move in this phase. The purpose of this step is for lecturers to provide additional information of a concept or an idea to facilitate students' understanding, which is usually achieved by long stretches of discourse from lecturers. Different from move 12 step 1 (*describing the topic*), this step does more than simply providing factual information. Its main focus lies in making difficult or abstract concepts or ideas clearer or easier for students to understand with the help of additional information from lecturers.

To realize the step, lecturers often gave many examples to help students to see more clearly how something worked or what something was like. The function of this step is also similar to the 'elaborating' function identified by Deroey and Taverniers (2011) in lectures, which signaled instances when examples and restatements were provided by lecturers to clarify ideas for students. Examples 59 and 60 illustrate the explanations in the current lectures:

(59) So we use stratified sampling when there are small groups, subgroups, that we want to make sure are represented… And we want to represent them

proportional to their size in the population. This can also be used to reduce the needed size of the sample…But if we stratify, we can take fewer samples…(C-Gu-02)

(60) Satan's shield is as big as the moon – this is the most common form of simile, epic or otherwise, and it can be schematized…let's say, "A equals A'." A'? You get it, something slightly different from A... (L-R-02)

The third step of move 12, *interpreting the topic*, appeared in half of the current lectures. Despite a newly-added step by the present study, it is associated with the one of the primary purposes/functions of the lecture genre, 'informing' (Deroey & Taverniers, 2011; Thompson, 1994). It usually occurred when the lecturers provided explanations or elaborations specific to a direct quote or a text segment to show what the passage was about and help students to understand it. This step was usually associated with the lectures' interpretation of writers'/researchers' intentions. What is different from move 12 step 2 (*explaining the topic*) is that this step specifically provides explanations regarding a certain passage in a text. Therefore, it usually appeared before or after a direct reference to a text segment. For example:

(61) It gives a sense that, even right here, we can say that it's almost as if the lawn has agency. It's not just sitting there. It's not just a lawn that is mowed by someone. It starts somewhere, it goes someplace, it jumps over things, it

generates its own momentum. (L-D-01)

(62) He's feeding us questions...He's not just making us experience Lolita's name the way he does; he's assuming that there are certain kinds of questions that we will ask. "Did she have a precursor?" (L-Hu-01)

The fourth step of move 12, *applying the knowledge*, were originally the move *applying the topic* proposed by Samraj and Petrovic (2015) based on law lectures where it was used to describe a hypothetical or a real legal case, and present analysis in terms of whether the introduced concepts can be applied to solve the case.

Considered that the current data are from disciplines different from law, it is expected that the topic and the content associated with this step will be different, but the function of the step should stay the same. In the current lectures, this step usually appeared as the lecturers presented a hypothetical problem based on real-life context and asked the students to try solving it using what they learned in the lecture. On the other hand, in some instances, lecturers simply provided information regarding how the main theme/topic could be applied in real situations. This step might seem to be similar to move 12 step 2 (*explaining the topic*), but it should be noted that the explanation of this step would have a connection with the real world, and/or center on real-life situations or contextualized problems.

In terms of move 12 step 4 (*applying the knowledge*), it is actually a step

combining the two sub-steps proposed in Samraj and Petrovic (2015), *illustrating the topic* and *analyzing the topic*. The discourse that fulfilled this step is usually associated with how the knowledge taught in the lecture could be applied, especially appearing when lecturers provided examples or practices related to real-life usage or contextualized situations. The step usually began with lecturers providing descriptions or background information regarding the questions to be answered (examples 63 and 64), and followed by lecturers providing analyses regarding how the issues could be addressed or gave step-by-step explanations in terms of the problem-solving process (example 65).

(63) **the situation here is that** a neighbor's dog often barks. It might be because of a burglar. It might be because of a raccoon. Sometimes, there's a burglar and a raccoon. Sometimes, the damn dog just barks. **So let's do some calculations there and calculate the probability that a raccoon is true…** (C-W-03)

(64) **So you probably all heard of the Titanic…**Of the 1,300 passengers, 812 died...So we're going to use machine learning to see if we can predict which passengers survived…There's an online database I'm using…it has information about 1,046 of them...Says what cabin class they were in first, second, or third, how old they were, and their gender…**We want to use these**

features to see if we can predict which passengers were going to survive the disaster… (C-Gu-03)

(65) I'm using random.sample. **I'll then get** the sample mean. **Then I'll compute** my estimate of the standard error by taking that as seen here. **And then if** the absolute value of the population minus the sample mean is more than 1.96 standard errors, **I'm going to** say I messed up. It's outside. **And then at the end, I'm going to** look at the fraction outside the 95% confidence intervals. (C-Gu-03)

The fifth step, *demonstrating the process*, was newly added by the present study. In this step, lecturers explained how something was done by directly demonstrating the process on the blackboards or on their laptops, such as how to write certain codes so the algorithm can work. This step was relatively easily captured with the help of the current multimodal data regarding lecturers' movements, such as writing on the blackboard or typing on the laptops, which greatly helped the researcher to identify the step. Examples 66 and 67 present how this step is realized:

(66) **((*Lecturer types codes on the laptop.*))** Again, we'll do it for both leave one out and random splits, and again for 10 random splits. (C-Gu-03)

(67) **((*Lecturer writes on the blackboard.*))** if you do things in a straightforward way you will create a recursive multiply, as I'll write here. And what you do

is you say let z0 equal x0 times y0, z two equals x2 times y2…And I have, overall, z equals y equals x1 y1 times r raised to n plus x0 y1 plus x1 y0 times r raised to n over 2 plus x0 y0 zero... (C-De-02)

In the sixth step of move 12, *highlighting important information*, lecturers usually directed students' attention to certain important concept. It appeared in more than half of the total lectures. This step is potentially associated with lecture comprehension, recall and note-taking (e.g. DeCarrico & Nattinger 1988; Jung, 2003; Björkman, 2011), because it could provide signals for students to recognize the significant points in dense information delivered in lectures. In the current lectures, this step usually appeared with the verb "note" or "notice" when lecturers tried to ask the students to focus on the following information or referred to a certain passage in the text (examples 68 and 69). In some instances, the lecturers were rather direct and highlighted the key information by simply using the words of "important" or "importance" (examples 70 and 71).

(68) **Notice what happens** if I do the following... (C-Gr-03)

(69) And **I urge you not to neglect** the foreword by John Ray Jr…. the little italicized foreword…(L-Hu-01)

(70) there's another reason **that's really important** that people prefer logistic regression, is it provides insights about the variables. (C-Gu-03)

(71) There's another way of thinking about it **that's extremely important**. (C-W-02)

The seventh step of move 12, *referring to/reading the text*, refers to the instances when the lecturers directed students' attention to a specific text segments or when they read aloud certain passages to students. This step was also added by the present study with the help of the multimodal data. This step was identified through the transcripts along with the lecturers' body movements in the lecture recordings where lecturers lowered their heads and directly read from books or handouts (Figure 2). For example:

(72) **((*Lecturer reads the text from the textbook.*))** This is the case with "Mowing," which is in your packet from RIS, and is an example of one of these Frostian poems about work. Let me read it for you…(L-Ha-01)

(73) **((*Lecturer reads the text from the textbook.*))** This is at line 920, the middle of the Hughes' page 573…So Dalila tells Samson…(L-R-03)

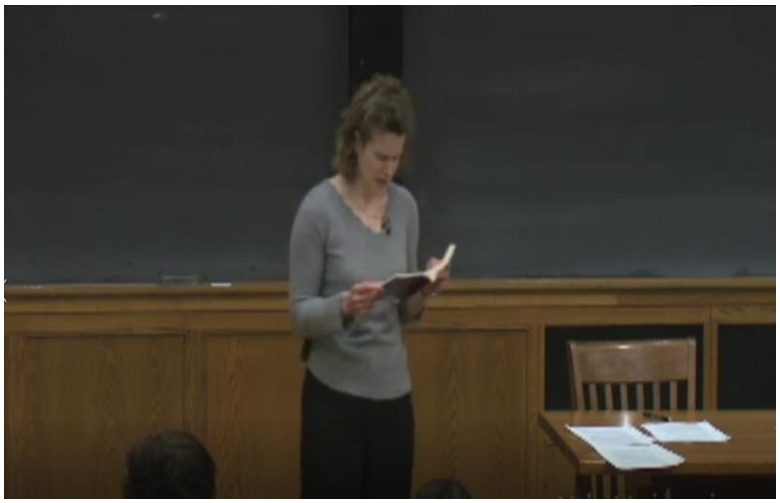

Figure 2. An example of lecturer referring to/reading the text

Move 13 (*evaluating the topic and arguing for a viewpoint*), is a new move added by the present study which appeared in all of the current lectures. This result thus confirms the importance and pervasiveness of evaluation in lectures indicated in previous studies (e.g., Biber, 2006; Deroey & Taverniers, 2011; Mauranen, 2002; Thompson, 1994; Young, 1994) As suggested by Thompson (1994), a lecture is not just a channel of passing information, but more essentially, offers "a lecturer's evaluation of the subject matter" (p. 171).

In the present study, the researcher drew on the definition of 'evaluation' proposed by Thompson and Hunston (2000) and considered the move as "the expression of the speaker or writer's attitude or stance towards, viewpoint on, or feelings about the entities or propositions that he or she is talking about" (p. 5). Therefore, this move is similar to the 'evaluation phase' (Young, 1994) and 'evaluating' function (Deroey & Taverniers, 2011), and roughly similar to 'stance'

(Biber et al., 1999).

This move may also allow lecturers to demonstrate their expertise (Deroey & Taverniers, 2011), promote critical thought (Issac, 1994), as well as to "shape the ways that students approach knowledge, helping them to assess how statements are to be interpreted" (Biber, 2006, p. 87). It also helps lecturers to point out "which approaches and which views to adopt and, by implication, which to reject" (Young 1994, pp. 172-173).

It should be noted that the identification of this move is not as straightforward as other moves, such as move 6 (*announcing the topic*). As noted by Mauranen (2004) and Biber (2006), context and non-verbal cues play important parts in identifying evaluations. Considered the current analysis was based on both video recordings and transcripts of lectures, the present study was able to more effectively identify this move. In the current data, this move usually appeared as lecturers offered their own viewpoints regarding a concept or a literary work, or as they evaluated the outcome or effectiveness of a method or a tool. For example:

(74) It's **not the most sophisticated** way of doing these things. There are hairy ways…But **this is a simple way. It works pretty well.** And you don't have to strain yourself, much, to implement it. So **that's cool**. (C-W-02)

(75) **For me the [laughs] absolutely shocking fact** of this simile is that its

primary purpose is merely [laughs] to describe the number of angels who are prostrate on the burning lake of hell. (L-R-02)

Move 14, *referring to content discussed in previous lectures*, is similar to the step of *referring to earlier lectures* in the beginning phase, where lecturers reminded students of what had been covered in previous lectures to help them see the connections between topics. This move is also another additional category added by the present study, which was found to occur in more than half of the total lectures. The fact that the two similar move/step categories appeared in both of the beginning and main body phases suggests that the function regarding 'referring to content mentioned in previous lectures' is not limited by different phases. It seems that lecturers tended to remind students of the topics that were covered before wherever and whenever suitable and possible. Examples 76 and 77 show how this move is realized:

(76) This is basically **something you saw in an earlier lecture**, where we had a bunch of animals and a bunch of properties, and a label identifying whether or not they were a reptile. (C-Gu-03)

(77) All right, but now I want to say something about the passage from **which I quoted** over against the passage from Gadamer **at the end of the Gadamer lecture. You remember Gadamer said…**(L-F-01)

Move 15 is *interacting with students*, which is also a new move category added by the present study. In identifying this move, the present study referred to the functions of 'interacting' proposed by Deroey and Taverniers (2011), which includes "promoting understanding, focusing attention and stimulating thought" (p. 14). This move was often achieved through lecturers asking questions to elicit students' responses, checking their comprehension, and/or stimulating their thoughts.

Interestingly, lecturers seemed to have multiple purposes when they asked questions. For some lecturers, they created classroom interactions by asking students questions and expecting answers from them as illustrated in example 78. However, for other lecturers, they simply asked questions to guide the students through understanding the topic or urged them to think from different perspectives (example 79). Questions may also serve the function for lecturers to manage topic changes, as suggested by Nesi and Basturkmen (2006). The different intentions of lecturers' use of questions could be observed from lecturers' body movements and linguistic features in the lecture recordings. The different purposes of lecturers' questions could be distinguished depending on whether lecturers finished the questions with long pauses and looked around the room, expecting answers, or simply raised the questions with relatively short pauses and continued with more statements.

(78) So I have this complexity here and order VE out there. **What's an**

interesting observation if you look at this board here and the two complexities? Anybody? Yeah, back there. (C-Dv-03)

(79) **Why? Why does he want to plant this question with us?** Well, he's working towards something that he will also in some ways backhandedly discredit. (L-Ha-01)

In terms of the timing of the occurrences of this move, some of them appeared between lecturers' explanations of a topic as a way to urge students to think along with the lecturers to figure out what the next steps would be. Lecturers also seemed to use it as a way to keep students focused and motivate them to participate actively in the class. On the other hand, some lecturers purposefully left some time for questions after talks of sub-topics, or set aside some time for questions near the end of lecture before giving summaries to resolve overall issues.

Move 16, *summarizing the main points*, was found in about 53% of the current lectures. This is also a move identified in Samraj and Petrovic's (2015) law lecture data. In this move, lecturers provide brief summaries or go over the key ideas after finishing a section on a sub-topic. This move usually appeared after move 13 (*evaluating the topic and arguing for a viewpoint*), and before the start of a new move cycle signaled by move 6 (*announcing the topic*). For example:

(80) But this is how it all works. And now you can write one of these things

yourself. Partly because you now have this catechism. This is the kind of stuff you should ask any time you're dealing with a new domain. (C-W-01)

(81) ((*Lecturer responds to a question proposed by himself before the work is introduced.*)) The allegorical names – how they function in Light in August, and how Faulkner's really updating the old classic story – the story is about the fate of someone called Byron and the fate of someone called Burden…they're both on fire. Byron is on fire because he's falling in love. Joanna Burden is also on fire in that she's being burned alive…But she's on fire, her body's on fire. So that is also what contributes to the Light in August, and why the alternative title, Dark House, is just as appropriate. (L-D-03)

Move 17, *pep talk*, was a new move added by the present study, which appeared in 10% of the lectures. It was realized in instances where lecturers encouraged students to work harder or to showed their support to students when the new topic might be challenging. As suggested by Deroey and Taverniers (2011), the relatively informal discourse, such as this move and move 11 (*telling asides or anecdotes*), seem to be able to reduce the distance and build rapport between lecturers and students. Moreover, such features may also "aid processing by providing breaks from the informationally dense lecture message" (Deroey & Taverniers, 2011, p. 16). Examples

82 and 83 illustrate the pep talk:

(82) There's another way that's more intuitive to many people. So if this doesn't make sense, **don't worry**, yet. (C-De-03)

(83) I'll show you exactly, or talk about exactly how they're done in a second. **It's not that hard**. (C-Dv-01)

Move 18, *reminding students of course-related information*, appeared in 20% of the current lectures, which is similar to move 1 step 2 (*housekeeping*) in the beginning phase. Example 84 illustrates the instance where the lecturer reminded the students of further assignment. Also, the step could also appear as lecturers tried to inform students of the information regarding course materials, such as textbooks or handouts, as illustrated in example 85.

(84) I know that you guys just turned in your first paper, but **it's not too early to start thinking about the next big project.** And the interconnections among the novels would be a very good approach. **Think about that larger project.** (L-D-02)

(85) there's an appendix in the textbook about it (C-De-02)

4.1.3 Move and step categories in the ending phase

In this phase, a total of three moves (*concluding the lecture*, *cooling down*, and *farewell*), and five steps (*summarizing the content of the lecture*, *indicating the end of*

a lecture, *looking ahead*, *housekeeping*, *addressing non-course related matters*) were identified based on the current lectures, as presented in Table 7, along with the frequency and the percentage of each move/category in the phase.

Table 7. Move structure of the ending phase based on the current lecture data

Moves/Steps	Frequency (%)
M19: Concluding the lecture	
S1: Summarizing the content of the lecture	14 (46.7)
S2: Indicating the end of a lecture	6 (20)
M20: Cooling down	
S1: Looking ahead	23 (76.7)
S2: Housekeeping	5 (16.7)
S3: Addressing non-course related matters	2 (6.7)
M21: Farewell	7 (23.3)

The first move in the ending phase, move 19 (*concluding the lecture*), can potentially be realized by two steps, which are *summarizing the content of the lecture*, and *indicating the end of a lecture*.

The first step of move 19, *summarizing the content of the lecture*, occurred in almost half of the total lectures (46.7%). This step is a combination of Cheng's (2012) move categories of *coming to a conclusion of lecture content* and *summarizing or reviewing key points*. This communicative purpose of this step is similar to that of the 'conclusion phase' in Young (1994) where "lecturers summarize points they have made throughout the discourse" (p. 166). As in the present lectures, this step appeared when lecturers provided summaries of what was covered in the lecture and highlighted the important ideas discussed earlier. For example:

(86) Typically, as we've just shown…**we started with** a simple simulation that…**we then saw** that we could change it to…**And so** we can start with something simple. And we get it ever more complexed to answer questions what if. (C-Gu-01)

(87) **Summary**: I want you to recognize different classes of algorithms…We've seen log, we've seen linear, we've seen quadratic, we've seen exponential... (C-Gr-02)

(88) Here in Milton's final poem, **we have an acknowledgment that** the process whereby one becomes a Miltonic hero is potentially ruinous. (L-R-03)

(89) **So let me conclude by saying that** if there is this remarkable distinction between…. (L-F-01)

In the second step of move 19 (*indicating the end of a lecture*), lecturers explicitly stated that the lecture was finished. It appeared in 20% of the current lecturers. Interestingly, some lecturers employed this step as an official end of the lecture and dismissed the class afterwards with a leave-taking goodbye (90), while in some lectures, this step simply suggested that there would not be any new information introduced and then the lecturers would proceed to deal with matters regarding class management (91) (92).

(90) ((*Lecturer dismisses the class.*)) Okay. That's it for today. (L-R-03)

(91) ((*Lecturer continues with course-related announcements.*)) So I think that's a good place to stop… (C-Dv-02)

(92) ((*Lecturer continues with course-related announcements.*)) So, I'm going to stop there… (L-Hu-03)

Move 20 (*cooling down*) and two of its steps, *looking ahead* and *housekeeping*, were adopted from Lee's (2016) move framework of the closing phase of EAP classroom lessons. The purpose of this move is mainly for lecturers to address issues related or not related to the course. The same two steps are also included in the beginning phase, and are similar to move 7 (*showing future course plan or lecture outline*) and move 18 (*reminding students of course-related information*) in the main body. This suggests that these strategies are commonly employed by lecturers while their occurrences in certain phases are rather unpredictable.

As Lee (2009) indicated, both *looking ahead* and *housekeeping* in lecture introductions are strategies employed by experienced teachers to show the students that they care about students' learning and as a way to encourage students to attend future class. The researcher claims that it is the same case for lecture ending as well. Considered that "a strong and powerful ending often stays clearly in the listeners' minds" (Cheng, 2012, p. 234), the experienced lecturers in the current lectures may

therefore tend to remind students of important issues related to course again in the end of the lecture.

In terms of the steps of move 20, the first step, *looking ahead*, specifies when lecturers provided information regarding future plans of the course, such as announcing topics of subsequent lectures. Given that the announcements were related to future events or actions, it was not surprising to see the frequent use of future tense and the many occurrence of modal verb "will" in this step, as illustrated in examples 93, 94, 95, and 96:

(93) Next class will be about sorting. (C-De-01)

(94) Amazingly, these two notions are going to be enough to take this algorithm and turn it into essentially a linear time algorithm. And **we'll do that next time.** (C-Dv-03)

(95) **Maybe I'll come back to** that briefly before launching into Jameson on Thursday. **On Tuesday of next week, we'll be talking about** the New Historicism. (L-F-03)

(96) **Next time we will be focusing on** the relationship of Samson Agonistes really to the rest of the entire Miltonic canon. (L-R-03)

The second step of move 20, *housekeeping*, is where lecturers give information regarding course-related matters, such as assignments or quizzes. For example:

(97) There's a few other algorithms here in the notes. **You should check them out.** (C-De-01)

(98) And, on the handout that I have given you. I'm not going to read it now 'cause we're running out of time; **I'd like you to read that at home** and I'm going to refer to it later. (L-Hu-01)

(99) When you leave today, **I would like to collect cards**, just to figure out how many of us there are… (L-Ha-01)

The third step, *addressing non-course related matters*, was added by the present study. It appeared when lecturers discussed non-course related issues with students, or made digressions, as illustrated in example 100. Considering the fact that almost all the lecturers in the current present tended to continue lecturing and addressing course-related matters until the very end of the class time, very few instances of this step actually appeared in the current data.

(100) **So let's conclude our discussion today was a little story.** A long time ago I was talking with a student who said, computers cannot be intelligent… (C-W-01)

Move 21 (*farewell*), the last move in the ending phase, appeared in 20% of the current lectures. This move was adopted from Lee's (2016) move framework of class

closings, which “formally signals a lesson’s official end” (Lee, 2016, p. 110), as illustrated in examples 101 and 102:

(101) So I'll see you then. (C-Gu-03)

(102) So, see you on Wednesday. (L-Ha-01)

Great variations were found in terms of the strategies employed in this phase based on the current data. Some lecturers simply concluded the lecture with one sentence announcing the lecture was finished due to the time, while some lecturers actually structured their endings intentionally by including information serving different purposes. In example 103 below, the lecturer managed to provide a series of information with each piece of information serving different functions and purposes, including informing students of what the next class will be about, announcing that there would be assignments for students, dealing with course-related issues, and finally signaled that the class had come to an end by bidding a farewell to the students.

(103) Okay. I’m going to spend a little bit of time at the beginning of class next time talking about…Don’t be distressed if you’re unfamiliar with it…And I will…hand out a meter exercise that you can do for next week. When you leave today, I would like to collect cards, just to figure out how many of us there are…So, see you on Wednesday. (L-Ha-01)

Overall, there does not seem to be a general linear sequence by which the moves and step follow in the move structure of the different phases in academic lectures. The difficulty of identifying the sequence of the moves and steps may be attributed to the fact that the moves and steps often occur in the same stretch of discourse, with one step embedded in another step, making it very difficult to tell them apart. Sometimes there would even be more than three steps identified in one sentence (examples 104 and 105), while sometimes one step would occur in another step (example 106).

In example 104, the lecturer simply used one sentence to fulfill multiple purposes. The utterance starts with the lecture telling the students what the topic is. Then, by saying "before actually building a classifier", the lecturer also implies to the students that a classifier will be built later in the lecture. The importance of the topic is also highlighted at the end of the discourse.

(104) The other thing I want to talk about before actually building a classifier is how we test our classifier, because this is very important. (C-Gu-03)

In example 105, multiple purposes were achieved in one long stretch of discourse, including the introduction of the lecture topic, the plan for the future lectures, and the scopes and the focus of the day's lecture.

(105) What I want to do today-since we have three lectures on Lolita-what I want to do today is simply to begin to open the text for you: to give you some

ways of reading it; to alert you to certain kinds of questions…to just get you thinking and into the texture of the novel. (L-Hu-01)

Example 106, on the other hand, shows the instance when the lecturer randomly included asides in the description of the background of different theories proposed by different physicists. It seems that the lecturer tended to add in some humorous notes in the informationally dense discourse regarding the history of the evolution of a concept.

(106) And two other very well-known physicists, Albert Einstein and Schrodinger, basically said, no, this is wrong. Bohr, Heisenberg, you guys are idiots. It's just not true. They probably didn't call them idiots. And this is most exemplified by Einstein's famous quote that "God does not play dice"… (C-Gu-01)

4.1.4 Summary

This section provides detailed descriptions of the overall move/step categories identified in the current lecture data. The current move analysis further revealed that there are many more move/step categories that could potentially appear in lectures compared with previous findings. To better show how the present framework is different from the previous ones, Table 8 presents the comparison between the move frameworks identified in the previous studies on lectures (Cheng, 2012; Lee, 2009;

Samraj & Petrovic, 2015; Thompson, 1994) and in the current study. The moves/steps categories in bold are the additional categories identified by the current study.

Table 8. The comparison between the move frameworks identified in the previous studies (Cheng, 2012; Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994) and in the current study

Previous studies	The current study
Beginning	
M1: Warming up	M1: Warming up
S1: Making a digression	S1: Making a digression
S2: Housekeeping	S2: Housekeeping
S3: Looking ahead	S3: Looking ahead
	S4: Getting started / Greeting
M2: Setting up lecture framework	M2: Setting up lecture framework
S1: Announcing the lecture topic	S1: Announcing the lecture topic
S2: Indicating the scope	S2: Indicating the scope
S3: Outlining the lecture structure	S3: Outlining the lecture structure
S4: Presenting the aims	S4: Presenting the aims
M3: Putting the topic in context	M3: Putting the topic in context
S1: Showing the importance of the topic	S1: Showing the importance of the topic
S2: Relating "new" to "given"	S2: Relating "new" to "given"
S3: Referring to earlier lectures	S3: Referring to earlier lectures
	M4: Asking probing question or raising issues for discussion
	M5: Showing topic interest
Main Body	
M4: Announcing the topic	M6: Announcing the topic
	M7: Showing future course plan or lecture outline
M5: Defining the topic	M8: Defining the topic
	M9: Describing the purpose
	M10: Showing topic relevance
	M11: Telling asides or anecdotes
M6: Contextualizing the topic	M12: Contextualizing the topic
S1: Describing a legal process	S1: Describing the topic
S2: Explaining the topic	S2: Explaining the topic
	S3: Interpreting the topic

S3: Applying the topic SS1: Illustrating the topic SS2: Analyzing the topic	S4: Applying the knowledge **S5: Demonstrating the process** **S6: Highlighting important information** **S7: Referring to/reading the text** **M13: Evaluating the topic and arguing for a viewpoint** **M14: Referring to content discussed in previous lectures** **M15: Interacting with students**
M7: Summarizing the main points	M16: Summarizing the main points **M17: Pep talk** **M18: Reminding students of course-related information**
Ending	
- dismissing the class or leave-taking goodbyes and wishes - indicating the plan for the future - indicating the end of lecture - explaining course-related issues - asking if students have questions - answering students' questions - raising questions about course-related issues - explaining non-course-related matters	**M19: Concluding the lecture** **S1: Summarizing the content of the lecture** **S2: Indicating the end of a lecture** **M20: Cooling down** **S1: Looking ahead** **S2: Housekeeping** **S3: Addressing non-course related matters** **M21: Farewell**

For the beginning and the main body phases, all the moves and steps identified by the previous studies (Lee, 2009; Thompson, 1994) were all found to appear in the current data. In terms of the beginning phase, the move and step categories identified by the previous studies and current studies are very similar, suggesting that lecture introductions are structured similarly, regardless of different lecturers or disciplines.

Despite the high similarity between the current framework and the previous ones of lecture beginnings, the move/step categories newly identified by the current study further highlighted the important features of lecture beginnings that had been overlooked. Based on the current data, this study identified two additional moves (M4: *asking probing question or raising issues for discussion* and M5: *showing topic interest*) and one step (M1S4: *getting started / greeting*) to the beginning phase. These newly-identified categories are essential in structuring the beginning phase in academic lectures, because they play rhetorical roles in the phase to signal the official start of a lecture, and to draw students' attention to lecture topics. The identification of these categories revealed lecturers' alternative strategies in structuring lecture beginning and also implied a potentially wider variety of moves in the beginning phase of lectures.

Moreover, with the current addition, this study further expanded the understanding of the move structure in lecture beginnings and provided potential pedagogical implications to EAP instruction. That is, EAP teachers can introduce the more extensive move structure in lecture beginnings proposed by the current study to students, which in turn could facilitate their understanding of the communicative purposes behind lecturers' messages.

In terms of the sequence of the moves and steps, although the present study tried to identify the sequential patterns of the moves and steps based on their progresses in the beginning phase, in fact it was found that they did not move in a linear sequence and sometimes they even appeared in reverse order, as also found by Thompson (1994) and Lee (2009) in lecture introductions.

For example, some lecturers would start a course by sharing an anecdote related to the lecture topic and use the anecdote as a way to announce the lecture topic and further introduce the related concept. In some instances, lecturers would begin a lecture by referring to what was discussed in previous lectures and draw connections between the previous and the current topics. Moreover, some lecturers would start a lecture by asking probing questions to students and have short discussions with the students before providing more information regarding the lecture topic.

Therefore, there does not seem to be a common sequence that lecturers follow to structure their lectures, at least not identified through the analysis of rhetorical moves. This may be explained by the potential influence of lecturers' individual idiosyncrasies in structuring a lecture, considered that a strict rhetorical structure that is commonly adopted by members of the community is not required for this part-genre. This finding thus supports Thompson's (1994) proposition that it is possible

that “lecture introductions do not need to have a preferred sequence of functional elements (moves), in contrast with introductions in other academic genres” (p. 181).

However, although the moves and steps may not seem to progress in a linear sequence, the many categories of moves and steps identified in the beginning phase together do realize the communicative purpose of the beginning phase, which is to “prepare the audience for the remainder of the lecture” (Thompson, 1994). Also, the identified move and step categories could still serve as useful guides for novice or non-native lecturers to structure their lecture introductions by comparing the elements included in their own lesson plans with the move framework identified in the present study. Non-native students can also be taught about the move and step categories and their functions in lecture introductions for them to have a rough picture of how lecture introductions are rhetorically structured.

In terms of the main body phase, Samraj and Petrovic’s (2015) original framework only includes four moves, three steps, and two sub-steps (as showed in Table 8). All of these categories were identified in the current lectures, yet the present study further expanded their framework by adding many more move categories that further reflect important features of lecture genre, including nine moves and four steps. The framework of the main body phase in academic lectures proposed by the current study is much more extensive than Samraj and Petrovic’s (2015) framework,

as clearly showed in Table 8. One reason that the present study was able to identify many more moves and steps in the current lectures could be the higher number of lectures analyzed in the present study than in Samraj and Petrovic (2015), where only four lectures on law were analyzed. Furthermore, the number of lecturers is also higher in the present study than Samraj and Petrovic's (2015) study. Therefore, a wider variety of rhetorical strategies is more likely to be identified in the present study, thus allowing more moves and steps to be identified.

The additional move and step categories identified by the present study captured some important features that characterize lecture genre, but were not identified in the previous study (i.e., Samraj & Petrovic, 2015). For example, this study identified the moves and steps associated with interpreting (M12S3: *interpreting the topic*), evaluating (M13: *evaluating the topic and arguing for a viewpoint*), interacting (M15: *interacting with students*, M17: *pep talk*), and calling for attention (M10: *showing topic relevance*, M11: *telling asides and anecdotes*, M12S6: *highlighting important information*), which are features frequently-seen and considered important to instructional genres (e.g., lectures) (e.g., Biber, 2006; Chambers & Gregory, 2006; Deroey & Taverniers, 2011; Thompson ,1994; Young, 1994).

These additional moves and steps should also be considered to have high pedagogical value especially to EAP teaching and learning. Considered they signal

the communicative purposes core to lecture genre, it is thus crucial for EAP teachers to provide their students with the additional move and step categories that are essential to the communicative purposes of the genre as supplements, on top of the existing move structure proposed by Samraj and Petrovic (2015).

Moreover, the additional move and step categories identified by the current study revealed the repeated occurring patterns of some moves and steps across the beginning and main body phases (e.g., M7, M10, M14). This suggests that some moves/steps are more flexible than the others in terms of the phases they appear in lectures, which also signifies their important role in reflecting the feature of the genre. Pedagogically, the move and step categories that appear across phases should be especially emphasized in EAP lessons, in order for EAP students to be aware of the potential flexibility of some moves/steps in terms of their occurring patterns. Explanations regarding the functions of the repeated moves/steps should also be provided to students, so they could understand the communicative purposes that the repeated moves/steps aim to fulfill, which could further facilitate their comprehension of the lectures.

In terms of the sequential order of the moves and steps in the main body phase, similar to what was found in the beginning phase, although a very rough move structure in terms of how moves and steps progress in the phase could be outlined,

there still does not seem to be a linear sequence for the movements of the moves and steps in this phase. Yet, for several moves, they do seem to progress in a rather linear sequence. For example, move 6 (*announcing the topic*) almost always preceded move 12 (*contextualizing the topic*), and move 12 almost always preceded move 13 (*evaluating the topic and arguing for a viewpoint*) and move 16 (summarizing the main points). These movements tend to recur together in the main body phase, thus forming cyclical move patterns.

Yet, some moves appeared in this phase rather randomly without a clear pattern. For example, move 11 (*telling asides or anecdotes*), move 14 (*referring to content discussed in previous lectures*), and move 15 (*interacting with students*) do not seem to have a routinized pattern in terms of where they would appear in this phase. Their occurrences in the phase are rather unpredictable and are often more like 'insertions' in other moves or steps.

For example, sometimes, anecdotes were provided in the beginning of the phase as a way to lead the students into the context of the topic or to focus students' attention, while sometimes they were added in the middle of lecturers' explanation of the topic, probably as a way to maintain students' attention to the topic. Moreover, in many instances, questions were raised by the lecturers at the beginning of the phase as a way to stimulate thought. Usually, lecturers would not provide answers at this point,

but would wait until summaries were given and then announce the answers. Yet, sometimes, questions were asked by the lecturers to elicit answers from students and create interactions in class.

Although there seems to be a rather rough structure in the main body phase for some moves, not all the moves and steps in this phase progress in a linear sequence generally. This finding is actually unsurprising, considering the spoken nature of the lecture genre, which means that there could be certain amount of fresh talk and on-line editing (Thompson, 1994). That is, despite being pre-planned, what is presented in the lecture is hardly as exact as planned, since new information is likely to be added as lecturers are presenting ideas in real-time.

In terms of the ending phase, the present study proposed a new framework to describe the move structure of lecture endings. This new framework was created through extensively revising Cheng's (2012) framework of lecture closings, with an aim to generate a framework of dual scheme containing both moves and steps, considering its potentially higher pedagogical value (Yang & Allison, 2003). Moreover, some moves identified by Cheng (2012) were further combined as one move by referring to previous research (Lee, 2016) to be more concise. For example, M19S1 (*summarizing the content of the lecture*) is a combination of two moves, *coming to a conclusion of lecture content* and *summarizing or reviewing key points*,

proposed by Cheng (2012). Moves that have multiple functions in Cheng's (2012) framework have been divided into different categories to be more specific. For example, the move, *dismissing the class or leave-taking goodbyes and wishes*, in Cheng's (2012) framework has been divided into M19S2 (*indicating the end of a lecture*) and M21 (*farewell*) in the current framework.

Moreover, this study revised some moves in Cheng's (2012) framework to more clearly demonstrate the parallel patterns of moves in the beginning and the ending phases. For example, the move, *indicating the plan for the future*, in Cheng's (2012) framework was revised into M20S1 (*looking ahead*); the moves, *explaining course-related issues* and *raising questions about course-related issues*, were revised into M20S2 (*housekeeping*) in the current framework. The rearrangement of the moves helped better highlight the reoccurring pattern of some moves across different phases. For example, the step, *looking ahead*, appeared in both of the beginning and the ending phases.

The new framework of lecture endings proposed by the current study provided a more detailed description of lecture endings through demonstrating a dual scheme of moves and steps, which more specifically showed how each move was realized by particular steps. By reorganizing the move/step categories and paralleling the category

names, this study provided a clearer view in terms of the similarity of the move structures between the beginning and the ending phases in lectures.

In terms of the importance of lecture ending, although Cheng (2012) emphasized their important role in lectures, Samraj and Petrovic's (2015) analysis revealed that lecture ending seems to be optional in a lecture and for times it did not even appear in their lecture data. Considering the two extreme views in terms of the ending phase, the present study would suggest a rather neutral stand and maintains that the ending phase has its own essential role in lecture structure as many moves and steps were still identified in the current lectures, but it may not be as complicated as illustrated in Cheng (2012), considering in some cases lecturers simply ended a lecture with a rather abrupt announcement.

This section provides detailed descriptions regarding the move/step categories identified in the current study, along with the examples illustrating how these categories function in realizing their individual communicative purposes. With the identified rhetorical categories, the following section then focuses particularly on illustrating the move structures identified in literature lectures and computer science lectures, as well as the comparison between the two move structures of the two disciplines.

4.2 Move structures of literature lectures and computer science lectures and disciplinary variations

Section 4.1 presents all the move and step categories appearing in the current lecture data and provides detailed descriptions and examples to show how each category is realized in the current lectures. Based on the identified move categories, the move structures of the two disciplines were further generated based on the categories appearing in the two disciplinary corpora. This section presents the move structures of the two disciplines of literature and computer science, and discusses the differences between them. There are three sub-sections in this section. Particularly, the first and second sub-sections provide overviews of the move structures generated based on the literature corpus and the CS corpus, along with the conventional and optional moves/steps identified in the two corpora respectively. The third sub-section focuses on the comparison of the two move structures in order to see whether there are disciplinary differences in terms of move structure in academic lectures. Shared conventional/optional move categories as well as those that are specific to certain disciplines are also discussed.

4.2.1 Move Structure of Literature Lectures

This subsection presents and discusses the move structure generated based on the current data of literature lectures. Note that not all of the move/step categories

identified in the current data appeared in the literature corpus, so the numbering of the move/step categories have been rearranged to particularly represent the move structure of the current literature lectures. Based on the current literature lectures, twenty moves and twenty steps were identified (see Appendix A). The following section presents the move and step categories appearing in the three phases of literature lectures respectively. Table 9 below displays the move structure in the beginning phase of literature lectures, and the frequency and the conventionality/optionality of each move and step.

Table 9. The move structure of the beginning phase of literature lectures

BEGINNING	**Frequency (%; n=15)**	**Conventionality**
M1: Warming up		
S1: Making a digression	2 (13.3)	optional
S2: Housekeeping	2 (13.3)	optional
S3: Looking ahead	5 (33.3)	optional
M2: Setting up lecture framework		
S1: Announcing the lecture topic	15 (100)	conventional
S2: Indicating the scope	5 (33.3)	optional
S3: Outlining the lecture structure	4 (26.7)	optional
S4: Presenting the aims	3 (20)	optional
M3: Putting the topic in context		
S1: Showing the importance of the topic	5 (33.3)	optional
S2: Relating “new” to “given”	9 (60)	optional
S3: Referring to earlier lectures	7 (46.7)	optional
M4: Asking probing questions or raising issues	5 (33.3)	optional
M5: Showing topic interest	8 (53.3)	optional

The communicative purpose of the beginning phase of literature lectures can be potentially realized by five moves and ten steps. Among them, one move/step

category is conventional and eleven are optional. Compared to move 1 (*warming up*), moves 2 and 3 can thus be considered comparatively core to the organization of lecture introductions, because they contain steps that appeared much more frequently in comparison to the steps in move 1. In fact, this result is not surprising considering that move 2 and move 3 are directly related to the primarily pedagogical aim of lecture genre.

Although both moves share the general goal to lead the students into the lecture through getting students ready for what is to come, they actually serve very different functions. As Thompson (1994) noted, in move 2, lecture is presented as an object to the students. That is, a lecture is unfolded as an object where its framework is established in this move, such as its structure and aim. On the other hand, the context in which the lecture topic is placed become the main focus in move 3. Through drawing on students' prior experiences or knowledge, or highlighting the importance or relevance of the topic, the context within which the topic is situated is constructed, serving as a foundation for students to build new knowledge upon.

Interestingly, despite the importance of move 3, none of its steps are conventional. This suggests that despite the essential role of this move in the beginning phase of lectures, lecturers may actually make use of different steps to contextualize the topic for students. Among the three steps, step 2 (*relating "new" to*

"given") appeared in 60% of the literature lectures and step 3 (*referring to earlier lectures*) occurred in almost half of the literature lectures (46.7%). Compared to the relatively low occurrence of step 1 (*showing the importance of the topic*) (33.3%) in realizing move 3, it seems that lecturers of literature tended to employ the strategies of reminding students of the topics discussed in previous lessons and/or activating students' prior knowledge or experiences to the new topic more often, instead of emphasizing how important the topic is to them.

The result might be explained by one important principle in teaching literature, especially the introductory courses, which is the principle of engagement (Chambers & Gregory, 2006). This principle emphasizes the importance of teachers delivering "with the intention of bringing about learning and which signal what is to be learned…" (p. 101), as well as engaging students with "a process of connecting with, or latching onto, something that already exists (people's knowledge, experience, understanding, perception, skill, desire), and harnessing it, ready to take off in appropriate directions" in literature class (p. 103). Considered the communicative purposes of steps 2 and 3 of move 2 are comparable to the principle in teaching literature, the experienced lecturers might therefore primarily employ them to contextualize new topics.

The only conventional step in the beginning phase of literature lectures is move 2 step 1 (*announcing the lecture topic*), which appeared in all of the literature lectures. In this step, the topic regarding what the day's lecture is going to center on is introduced to students. The conventionality of this step suggests that lecturers tend to explicitly and directly inform students of the lecture topic. This strategy was employed to help lecturers to set a clear focus for the lecture, and in some cases, it was used to also demonstrate the official start of a lecture since some lecturers were found to directly announce the main lecture topic and dive straight in the talk, without using any of the warming up steps. This might also explain why move 1 is found to be optional in the current lectures.

In terms of the main body phase, there are twelve moves and five steps identified in the current literature lectures. Table 10 presents the move structure of the main body phase of literature lectures, and the frequency and the conventionality of each move/step category.

Table 10. The move structure of the main body phase of literature lectures

MAIN BODY	**Frequency (%; n=15)**	**Conventionality**
M6: Announcing the topic	15 (100)	conventional
M7: Showing future course plan or lecture outline	11 (73.3)	optional
M8: Defining the topic	6 (40)	optional
M9: Describing the purpose	3 (20)	optional
M10: Showing topic relevance	10 (66.7)	optional
M11: Telling asides or anecdotes	9 (60)	optional
M12: Contextualizing the topic		
S1: Describing the topic	15 (100)	conventional
S2: Explaining the topic	15 (100)	conventional
S3: Interpreting the topic	15 (100)	conventional
S4: Highlighting important information	7 (47)	optional
S5: Referring to/reading the text	14 (93)	conventional
M13: Evaluating the topic and arguing for a viewpoint	15 (100)	conventional
M14: Referring to content discussed in previous lectures	9 (60)	optional
M15: Interacting with students	6 (40)	optional
M16: Summarizing the main points	7 (47)	optional
M17: Reminding students of upcoming assignment	4 (26.7)	optional

Among them, two moves are conventional, which are move 6 (*announcing the topic*) and move 13 (*evaluating the topic and arguing for a viewpoint*). The conventional steps in this phase are all the constituent steps of move 12 (*contextualizing the topic*), which are *describing the topic*, *explaining the topic*, *interpreting the topic*, and *referring to/reading the text*.

As move 2 step 1(*announcing the lecture topic*) is conventional in the beginning phase, a similar strategy, move 6 (*announcing the topic*) was also found to be

conventional in the main body phase, appearing in all of the literature lectures. In this step, the discourse markers, such as “now” and “let’s”, usually appeared, which can be considered cues signaling the start of a new topic and the direction of the talk (Biber et al., 1999). For example:

(107) Now, I want to draw back from just being immersed in those details of the text for a minute to suggest to you that… (L-Hu-01)

(108) Let’s see what Fitzgerald does with the telephone. (L-D-01)

In terms of move 12 (*contextualizing the topic*), four out of its five constituent steps are conventional in the main body phase of literature lectures as well. The functions of the conventional steps of move 12 include providing descriptions, explanations, and interpretations of the topic as well as referring to specific text segments. Move 12 step 1 (*describing the topic*) usually appeared first compared to the other steps in move 12, after the topic was announced. In this step, lecturers of literature usually provided information regarding the historical background of the literature work or facts about the researcher. For example:

(109) It was written between 1937 and 1937. (L-D-02)

(110) As a graduate student at Harvard in 1910 he expatriated to Europe. (L-Ha-02)

Move 12 step 2 (*explaining the topic*) almost always appeared right after move 12 step 1 (*describing the topic*). In this step, lecturers often pointed out the concepts or key points in the researcher's work that they were going to focus on. Explanations of the concepts or key ideas were usually offered by lecturers to explain abstract or difficult concepts in a simpler way. In this step, large stretches of discourse and the provision of many examples from lecturers were very common. Similar to Samraj and Petrovic (2015), the lexical expressions, including "so", "for example", "in other words" and "that is" were frequently seen in the text segments that realized this step to provide reasoning, clarification, or alternative ways to understand the ideas. For example:

(111) there's still plenty to say: "ih-ih" and the "ih" in raining, which one can hear–the double "ih" in raining…so that the duration of prolongation of the word has a kind of semantic value indicating to us that this is something ongoing–in other words, a variety of ways in which the poetic function of "It is raining" can be considered. (L-F-01)

The rest of the two conventional steps of move 12, *interpreting the topic* and *referring to/reading the text*, and move 13 (*evaluating the topic and arguing for a viewpoint*) usually appeared together. In the current literature lectures, each lecture usually centered on one literary work, and it was frequent to see the lecturers direct

students' attention to specific passages or simply read aloud some text segments from the literary text to students. Lecturers' interpretation or evaluation of the passages could occur before or after the reading of texts. Some lecturers seemed to prefer providing some arguments before showing the evidences from the texts, as illustrated in example 112. Some lecturers, on the other hand, would directly lead the students to read the target text segment and then share their own interpretations or viewpoints to students, as can be seen in example 113.

(112) This is actually not entirely funny-it's interesting to see what the tone of this is, of the description of Lena being on the road. **((*Lecturer reads the text.*))**. (L-D-03)

(113) This is on page 39. So he's walking through the house…**((*Lecturer reads the text.*))**…this is a remarkable passage to me…I think we feel the freshness of this prose…(L-Hu-01)

These three categories reflected the steps of the *reading*, which is referred to as "the discourse processes of textual analysis-interpretation-evaluation" (Chambers & Gregory, 2006, p. 103). This process is also considered one of the processes particularly crucial to beginning students of literature (Chambers & Gregory, 2006). This may also explain the reason why these three categories frequently appear together, regardless of different sequential orders.

In terms of the ending phase of literature lectures, three moves and five steps were identified. Table 11 below presents the move structure in the ending phase of literature lectures, and the frequency and the conventionality/optionality of each move/step.

Table 11. The move structure of the ending phase of literature lectures

ENDING	**Frequency (%; n=15)**	**Conventionality**
M18: Concluding the lecture		
S1: Summarizing the content of the lecture	6 (40)	optional
S2: Indicating the end of a lecture	2 (13.3)	optional
M19: Cooling down		
S1: Looking ahead	13 (86.7)	conventional
S2: Housekeeping	3 (20)	optional
S3: Addressing non-course related matters	1 (6.7)	optional
M20: Farewell	2 (13.3)	optional

Among them, only move 19 step 1, *looking ahead*, was found to be conventional, with the rest of moves and steps being optional. Although this conventional step did not appear in all of the literature lectures, it appeared in thirteen out of the total fifteen lectures (86.7%), suggesting that it is still common strategies that was used to fulfill the communicative purposes of the ending phase of literature lectures.

Among the three constituent steps of move 19, only the step, *looking ahead*, was conventional (86.7%), while the other two steps, *housekeeping* (20%) and *addressing non-course related matters* (6.7%) were found much less frequently-seen in this

phase. This finding is also similar to Cheng's (2012) finding where she also found teachers' strong tendency to tell student what they intend to do in future classes. Therefore, the high occurrence of the step, *looking ahead*, suggests that it is core to the rhetorical organization of the ending phase. It seems that the lecturers in the current literature lectures had a strong tendency to mention what would be covered in future lectures.

Considered that it is unlikely for lecturers to cover the whole book in one or several of lectures, it is thus reasonable that lecturers of literature would want the students to preview the assigned literary work before class so it would be easier for the students to keep up with the discussion in lectures. Chambers and Gregory (2006) pointed out the growing problem reported by literature lecturers that students are ill-prepared or simply fail to do the reading, thus causing their low participation in class. As suggested by Lee (2009), the function of "looking ahead" is for lectures to indirectly advise students to preview the assigned reading and encourage students to attend future lectures through informing students of the future topics. This might explain why literature lecturers employed the step so frequently.

Additionally, this step seems to be more marked in the ending phase of series of lectures dedicated to the same literary work. In that case, since the discussion of a work was not completed in the current lecture and would continue in future lectures,

the lecturers would usually talk about what sections s/he would be focusing on in the future lectures, or note the important points that students should be paying attention to while previewing the literary work.

4.2.2 Move structure of computer science lectures

A total of nineteen moves and twenty-one steps were identified from the current computer science lectures, with three moves and eleven steps identified in the beginning phase, thirteen moves and five steps identified in the main body phase, and three moves and five steps identified in the ending phase (see Appendix B). Among all of the move/step categories, eleven of them were found to be conventional, with the rest being optional. Table 12 below presents the move structure of the beginning phase of computer science lectures, and the frequency of each move/step and their conventionality. Note that not all of the move/step categories identified in the current data appeared in the computer science corpus, so the numbering of the move/step categories have been rearranged to particularly represent the move structure of computer science lectures.

Table 12. The move structure of the beginning phase of computer science lectures

BEGINNING	**Frequency (%; n=15)**	**Conventionality**
M1: Warming up		
S1: Making a digression	2 (13.3)	optional
S2: Housekeeping	2 (13.3)	optional
S3: Looking ahead	8 (53.3)	optional
S4: Getting started / Greeting	3 (20)	optional
M2: Setting up lecture framework		
S1: Announcing the lecture topic	14 (93.3)	conventional
S2: Indicating the scope	4 (26.7)	optional
S3: Outlining the lecture structure	7 (46.7)	optional
S4: Presenting the aims	6 (40)	optional
M3: Putting the topic in context		
S1: Showing the importance of the Topic	6 (40)	optional
S2: Relating “new” to “given”	6 (40)	optional
S3: Referring to earlier lectures	12 (80)	conventional

In the beginning phase, three moves, *warming up*, *setting up lecture framework*, and *putting the topic in context*, along with seven steps, were identified from the current computer science lectures. In fact, move 2 appeared in 100%, and move 3 occurred in 93.3% of the current computer science lectures. As discussed previously, the purposes of the two moves are primarily about presenting the lecture as an object and providing the information regarding the context where the topic is placed (Lee, 2009; Thompson, 1994). Therefore, it is not surprising to find the two moves appearing so frequently in the beginning phase.

The two conventional steps are move 2 step 1 (*announcing the lecture topic*) and move 3 step 3 (*referring to earlier lectures*). The text segments serving the purposes

of these two steps usually appeared near each other. More specifically, lecturers usually reminded the students of what was discussed in the previous lectures as a way to show the connection between the previous and the current topics and also to allow students opportunities to recall what had been covered in the previous lectures.

Interestingly, move 3 step 3 was found to be achieved very differently, in terms of the length of the discourse that different lecturers took to accomplish its communicative purpose. In some instances, lecturers mentioned that something had been discussed in the previous lectures simply by inserting very short segments in a discourse mainly aiming for different purposes, as showed in example 114 and example 115. These examples demonstrated the nature of lectures as a spoken genre. That is, although lectures are usually pre-planned, on-line editing and fresh talk still tend to occur (Thompson, 1994).

(114) And what I'll do is define this problem and talk about how we could possibly solve it with the data structures **you've already seen**-- so lists and arrays, heaps as well as, **which we saw last time** -- and hopefully motivate you into the reason behind the existence of binary search trees…(C-Dv-01)

(115) The kind of problem solving you'll see today is like generating test, **which you saw last time**. (C-W-01)

Yet, to achieve this step, some lecturers actually dedicated lengthy monologues to revisit the topics discussed in previous lectures, as illustrated in example 116. It seemed that the speech was pre-planned by the lecturer to deliberately recap what had been presented in previous lectures, especially those particularly important or had strong connections with the topic to be introduced in the day's lecture.

(116) **What have we actually done over the last few lectures?** And I want to suggest that what we've done is, **we've outlined** a lot of the basic elements of programming…So I'm going to suggest that **we've looked at** three different kinds of things. **We've talked about**…I'm going to suggest **we've seen**…And then the main thing we've done is, **we've talked about**… (C-Gr-01)

In terms of the move structure identified in the main body phase of computer science lectures, Table 13 presents the move/step categories identified in the current data, and the frequency of each category along with the conventionality of each category.

Table 13. The move structure of the main body phase of computer science lectures

MAIN BODY	**Frequency (%; n=15)**	**Conventionality**
M4: Announcing the topic	15 (100)	conventional
M5: Showing future course plan or lecture outline	9 (60)	optional
M6: Defining the topic	14 (93)	conventional
M7: Describing the purpose	6 (40)	optional
M8: Showing topic relevance	5 (33.3)	optional
M9: Telling asides or anecdotes	12 (80)	conventional
M10: Contextualizing the topic		
S1: Describing the topic	13 (86.7)	conventional
S2: Explaining the topic	15 (100)	conventional
S3: Applying the knowledge	13 (86.7)	conventional
S4: Demonstrating the process	15 (100)	conventional
S5: Highlighting important information	9 (60)	optional
M11: Evaluating the topic and arguing for a viewpoint	15 (100)	conventional
M12: Referring to content discussed in previous lectures	8 (53.3)	optional
M13: Interacting with students	14 (93)	conventional
M14: Summarizing the main points	9 (60)	optional
M15: Pep talk	3 (20)	optional
M16: Reminding students of upcoming assignment	2 (13.3)	optional

In the main body phase, a total of thirteen moves and five steps were identified based on the current data of computer science lectures, Among the identified categories, five moves and four steps were found to be conventional. The conventional moves are: move 4 (*announcing the topic*), move 6 (*defining the topic*), move 9 (*telling asides or anecdotes*), move 11 (*evaluating the topic and arguing for a viewpoint*), and move 13 (*interacting with students*).

Interestingly, three moves, moves 4 (*announcing the topic*), 6 (*defining the topic*), and 10 (*contextualizing the topic*), usually appeared in a linear sequence. In other words, this phase usually starts with the lecturers announcing the topic, followed by the lecturers providing definitions of important terms or concepts regarding the topic, and more information regarding the topic offered then.

On the other hand, the other two conventional moves did not seem to appear following a sequential pattern. For example, move 11 (*evaluating the topic and arguing for a viewpoint*), despite being a conventional move, appeared either before or after a series of explanation of a topic. In some cases, lecturers expressed their own opinions before talking about a topic, while in more cases, lecturers tended to offer their own evaluations or provide arguments after a topic had been thoroughly introduced, as illustrated in example 117:

(117) And in fact, if you try and look how to do this, most people will tell you don't bother. Here's kind of a **good** approximation. But the math gets very **hairy**. In contrast, changing the simulation is **dead easy**. (C-Gu-01)

Another conventional move in this phase is move 13 (*interacting with students*), which plays an important role in facilitating interactions in class and improving lecturer-student relationship. This move is usually accomplished by lecturers or students asking and answering content-related questions. Interestingly, based on the

lecture recordings, some lecturers offered incentives, such as candy or seat cushions, to encourage students to answer questions. Also, by employing this step, lecturers could encourage students to more actively participate in the class through constantly asking questions and providing feedback. Therefore, one explanation that this step is conventional might be that the experienced lecturers frequently used this strategy to keep students focused and engaged in the class. This strategy is also considered one of the common ways to engage students in university lectures (Gray & Madson, 2007).

Another way to keep students focused and interested in the lecture topic could also be achieved by move 9 (*telling asides or anecdotes*), which is also a conventional move. It is interesting to discover the importance of telling stories or anecdotes in computer science lectures. Its role to create a relaxing learning environment and establish positive relationship between teachers and students has been emphasized in Crawford Camiciottoli (2005). In the current computer science lectures, it seems that lecturers tended to tell anecdotes either quite relating to or not at all relating to the lecture topic to lighten the mood of the class and also form bonds with students. Examples 118 and 119 illustrate the anecdotes:

(118) This program, by the way, is a dawn-age program. This was written by a nearly blind, and subsequently completely blind, graduate student by the name of James Slagle in 1960, a long time ago. (C-W-01)

(119) I've got two sons, now aged eighteen and twenty, they used to think I had the coolest job in the world because I came home covered in chalk. Now they have a different opinion that you can probably figure out. (C-Gr-01)

Four of the total five steps of move 10 (*contextualizing the topic*) are conventional, suggesting that these steps are core to achieving the purpose of the move. Despite being a conventional step in move 10, *explaining the topic* took up a rather large part in computer science lectures in terms of the length it took to fulfill its communicative purpose. Lecturers often provided lengthy monologues to break down difficult and complicated concepts into smaller units of information to help students understand, or to make abstract theories more easily to be comprehended by giving a number of examples. When lecturers tried to make a concept clearer, the linguistic features that often occurred in the explanations are “in other words” and “that is”, signaling that one concept is to be explained in a simpler or an alternative way. For example:

(120) And then it needs to have access to that, so it calls it, passing in self as the pointer to the instance. **That is**, it says it has access to that piece in memory… (C-Gr-03)

After a topic is introduced and the key ideas regarding it are explained, normally step 6, *applying the knowledge*, would appear then. The purpose of this move is to

show how the concept introduced earlier could be further applied in real-life or hypothetical situations. Considered the applied nature of this discipline (Biglan, 1973; Clark, 2003), it is therefore not surprising to see lecturers further talk about the application of the introduced tools or methods after their functions are explained.

Usually the lecturers would initiate step 6 by setting up the background context about a problem (example 121). Then, the lecturers would lead the students to analyze the problem and explain or even demonstrate how the problem could be solved by applying the concepts or methods presented previously in the lecture (example 122).

(121) For those of you familiar with American football, the New England Patriots and the Denver Broncos are two prominent teams. And let's look at computing the probability of whether one of them will lose on a given Sunday. So the Patriots have a winning percentage of 7 of 8-- they've won 7 of their 8 games so far--and the Broncos 6 of 8… (C-Gu-01)

(122) So let's approximate a solution. **We'll write** a simulation and see if we get the same answer that that formula gave us. So here's the code for that-- two arguments…**I'll keep track of** the number…**I'll make** a random choice…And **we'll try**...And then just, **we'll print** the estimated probability and the actual probability computed using that formula I showed you…Let's run it. (C-Gu-01)

The conventional step, *demonstrating the process*, occurred in all of the fifteen computer science lectures. This step was realized by lecturers demonstrating how to write certain code using a programming language or how an equation was derived, and/or showing the reasoning/executing process by drawing flow charts (Figure 3).

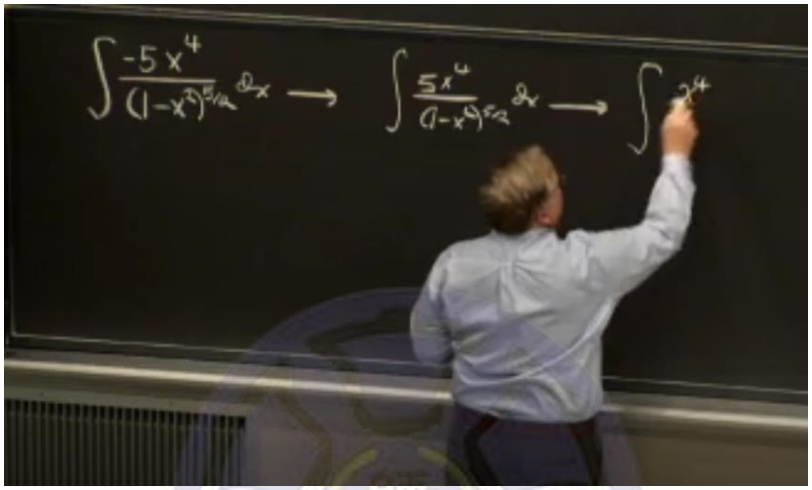

Figure 3. An example of lecturer demonstrating the process of deriving an equation

Considering that computer science is a discipline with an applied orientation (Biglan, 1973), it is important for students to both know the discipline-related knowledge as well as know how to make something work, such as constructing computer systems and testing conceptual solutions by implementing them (Clark, 2003), and creating tools for someone to use (Brooks, 1996). Therefore, it is not surprising to find that all the lecturers in the current data demonstrated certain processes in their lectures, such as how certain codes should be written in order to have the program implement certain algorithm successfully. In some cases, lecturers preferred to write the codes on the blackboard line by line while explaining how a

method should be written with certain programming language (Figure 4), while in other cases, lecturers tended to type the codes on laptops and ran the codes to test whether they would work (Figure 5). Examples 123 and 124 below illustrate how this step is carried out verbally:

(123) I've imported a library called math, because it is a factorial implementation…Let's run it. (C-Gu-01)

(124) So if we come over here for the code, all I have to do is change…And I'm going to leave in this code…And I get invalid syntax. (C-Gu-01)

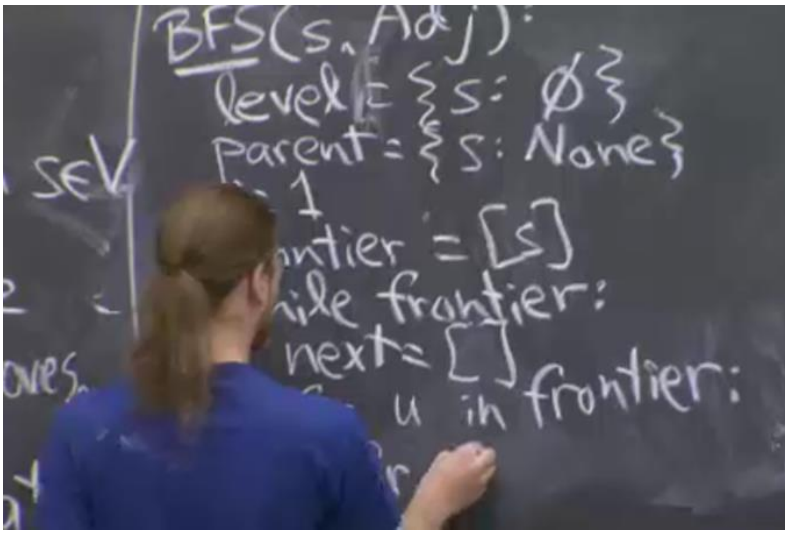

Figure 4. An example of lecturer demonstrating the coding process on the blackboard

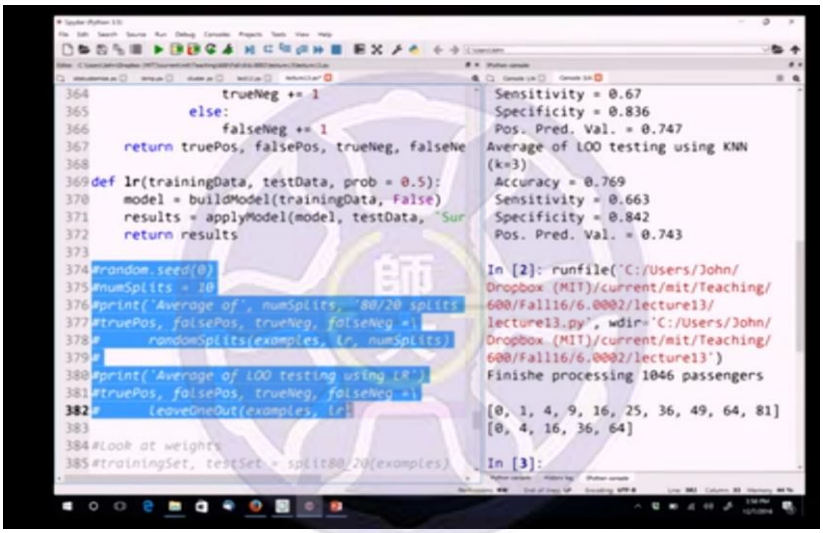

Figure 5. An example of lecturer demonstrating the coding process on the laptop

Sometimes, this step occurred when the lecturers showed the students how a formula could be applied to solve a math problem, or how a formula was derived. Then the lecturers would guide the students step by step through writing down the process regarding how the answers or results could be obtained. For example:

(125) So 2 for minus 6 over here, 3, 2, 1, and minus 2…Minus 6 plus 2 is minus 4. Minus 4 plus 3 is minus 1…(C-Dv-03)

In terms of the move structure of the ending phase of the current computer science literatures, Table 14 presents all the move and step categories identified in this phase, as well as their frequency and conventionality.

Table 14. The move structure of the ending phase of computer science lectures

ENDING	**Frequency (%; n=15)**	**Conventionality**
M17: Concluding the lecture		
S1: Summarizing the content of the lecture	8 (53.3)	optional
S2: Indicating the end of a lecture	4 (26.7)	optional
M18: Cooling down		
S1: Looking ahead	10 (66.7)	optional
S2: Housekeeping	2 (13.3)	optional
S3: Addressing non-course related matters	1 (6.7)	optional
M19: Farewell	5 (33.3)	optional

Three moves, *concluding the lecture*, *cooling down*, and *farewell*, along with five steps were identified in this phase. Among them, in fact, move 17 (*concluding the lecture*) was found to appear more frequently than the rest of the moves and steps in this phase, with it appearing in 80% of the computer science lectures. Interestingly, despite the relatively high frequency of move 17, its two constituent steps, *summarizing the content of the lecture* and *indicating the end of a lecture*, are optional. This suggests that lecturers ended their lectures quite differently, with more lecturers (53.3%) ending the lectures with summaries of the lecture contents, and

fewer lecturers (26.7) finishing the lectures simply with direct announcements that the lecture had come to an end.

However, the fact that this move is so common suggests that whichever strategies were employed, some strategies would be used by lecturers to signal to students that the lectures were coming to an end. This finding is quite different from Samraj and Petrovic (2015), where they found some lectures simply faded out, with teachers particularly addressing questions from some students while other students were talking to each other and leaving the classroom.

Although most move and step categories identified in this phase are optional, the fact that many different strategies were identified in this phase suggests that this phase is still purposefully structured to some extent. The different findings in the present study and Samraj and Petrovic's (2015) study may be due to the different numbers of lectures analyzed. Samraj and Petrovic (2015) only analyzed four lectures while this study investigated thirty lectures. With a larger number of lectures and more lecturers investigated, the present study, therefore, is more likely to reveal many more and more diverse patterns in the ending phase.

The sub-sections above gave an overview of the two move structures identified based on the literature and computer science lectures and discussed in particularly the conventional move/step categories identified in the different phases of the lectures of

the two disciplines. With the respective move structures of the two disciplines discussed previously, the following section focuses on the comparison of the two move structures of the literature and computer science lectures.

4.2.3 Comparison of move structures of literature and computer science lectures

In addition to exploring the move structures of literature lectures and computer science lectures, the present study also aimed to investigate whether there are disciplinary variations in terms of move structures between the two disciplines. Therefore, a comparison of the move structures identified in literature lectures and computer science lecturers was conducted, particularly focusing on the differences of the moves/steps identified between the two disciplines, and the conventionality of the shared move/step categories and those that are specific to certain disciplines. Through the comparison, the extent to which the two disciplines vary in terms of move structures can be elucidated. The following sections presents the comparisons between the rhetorical move structures of literature and computer science lectures in the three phases: beginning, main body, and ending respectively.

Table 15 in the following summarizes the comparison of the move structures identified in the beginning phase of the two discipline in terms of the frequency and the percentage of the identified move and step categories. Table 16 then presents the comparison of the conventionality/optionality of the move categories in the two

disciplines. The bold words indicate the differences in terms of the conventionality and the presence/absence of the move categories between the two disciplines.

Table 15. Comparison of the move and step categories identified in the beginning phase of computer science and literature lectures.

	Computer science	**Literature**
Moves/Steps	**Frequency (%; n=15)**	**Frequency (%; n=15)**
M1: Warming up		
S1: Making a digression	2 (13.3)	2 (13.3)
S2: Housekeeping	2 (13.3)	2 (13.3)
S3: Looking ahead	8 (53.3)	5 (33.3)
S4: Getting started / Greeting	**3 (20)**	**0 (0)**
M2: Setting up lecture framework		
S1: Announcing the lecture topic	14 (93.3)	15 (100)
S2: Indicating the scope	4 (26.7)	5 (33.3)
S3: Outlining the lecture structure	7 (46.7)	4 (26.7)
S4: Presenting the aims	6 (40)	3 (20)
M3: Putting the topic in context		
S1: Showing the importance of the Topic	6 (40)	5 (33.3)
S2: Relating “new” to “given”	6 (40)	9 (60)
S3: Referring to earlier lectures	**12 (80)***	**7 (46.7)**
M4: Asking probing questions Or raising issues	**0 (0)**	**5 (33.3)**
M5: Showing topic interest	**0 (0)**	**3 (20)**

Note. * = conventional

Table 16. Summary of the conventionality of moves/steps in the beginning phase of computer science and literature lectures

	Computer science	**Literature**
Moves/steps		**Conventionality**
M1: Warming up		
S1: Making a digression	optional	optional
S2: Housekeeping	optional	optional
S3: Looking ahead	optional	optional
S4: Getting started / Greeting	**optional**	**n/a**
M2: Setting up lecture framework		
S1: Announcing the lecture topic	conventional	conventional
S2: Indicating the scope	optional	optional
S3: Outlining the lecture structure	optional	optional
S4: Presenting the aims	optional	optional
M3: Putting the topic in context		
S1: Showing the importance of the topic	optional	optional
S2: Relating “new” to “given”	optional	optional
S3: Referring to earlier lectures	**conventional**	**optional**
M4: Asking probing questions or raising issues	**n/a**	**optional**
M5: Showing topic interest	**n/a**	**optional**

The comparison between the two move structures showed that among the five moves and eleven steps identified in the beginning phase based on the current data, two moves and one step are discipline-specific. That is, about 81.3% of the move structures in the beginning phase of computer science and literature lectures are similar in terms of the presence of the move and step categories. In other words, despite different disciplines, the beginning phase is structured quite similarly by

lecturers using similar rhetorical strategies to fulfill the communicative purposes of this phase.

In move 1 (*warming up*), three of its four steps: step 1 (*making a digression*), step 2 (*housekeeping*), step 3 (*looking ahead*), are optional in both literature and computer science lectures. However, move 1 actually appeared in many more computer science lectures (73.3%) than literature lectures (46.7%). It seems that compared to their counterparts, lecturers of computer science more commonly allowed students time to settle in and also for themselves to attend to matters related or not related to the current course by using steps of move 1 as a 'buffer' between formal lecture contents and course-related matters or digressions (Lee, 2009).

Move 1 step 4 (*getting started/greeting*) is the only step in move 1 that is not shared by the two disciplines, which is actually a step specific to computer science lectures. In fact, it was only minimally employed by two lecturers in three lectures as explicit signals of the start of a lecture. Interestingly, it was found to be a conventional rhetorical strategy in EAP classroom lessons (Lee, 2016). The difference suggests that this step is not a marked rhetorical strategy used to structure the beginning phase in academic lectures, but is a rhetorical strategy rather typical to the genre of EAP classroom lessons.

The step employed most often to realize move 1 in both disciplines is step 3 (*looking ahead*). As what Lee (2009) found, particularly in large university lecture introductions, by employing this step, experienced teachers could directly or indirectly advise students to preview the texts by informing them of future plans, or show students that they "care about students' learning and want to keep them informed of crucial course-related matters that may affect their success in the courses" (p. 47). Therefore, it could explain the relatively high occurrence of this step in the current lectures. This step might also be used as a strategy by the lecturers to encourage students, especially those who attend classes irregularly, to attend future lectures by interesting them with future topics and emphasizing the importance of upcoming lectures (Lee, 2016). The finding suggests that this step potentially serves an important function not only to keep students informed but also to convey a message that the lecturers do care about their students' learning.

Moves 2 (*setting up lecture framework*) and 3 (*putting the topic in context*) were found to appear quite frequently in both disciplines, with the former appearing in all of both literature and computer science lectures, and the latter appearing in 93.3% computer science lectures and 86.7% in literature lectures. With these two moves also identified in the lecture introductions in Thompson (1994) and Lee (2009) based on lecture introductions of a variety of disciplines, moves 2 and 3 can be considered

common rhetorical strategies used by lecturers to structure the beginning phase of academic lectures.

As also found in Lee (2009), step 1 (*announcing the lecture topic*) is usually the first step appearing to realize move 2, compared to the other steps in the same move. It is also the only conventional step shared by both literature and computer science lectures, which appeared in 29 out of the total 30 lectures. It is not surprising that this step was found to be a conventional step considering in which a lecturer "clearly articulates to the audience the main topic of the lecture and provides them with a preview of the ensuing talk" (Lee, 2009, p. 48).

Except for step 1, the rest of the three steps of move 2 were employed differently in the two disciplines to achieve the communicative purpose of the move. In computer science lectures, step 3 (*outlining the lecture structure*) was used the most, while step 2 (*indicating the scope*) was employed in literature lectures the most often. The results appear to suggest that lecturers of computer science tended to provide students with clear lecture overviews in terms of what to expect, while lecturers of literature tended to particularly highlight to the students the aspect of a topic that they were to center on, among the other potential aspects also relating to the topic.

In move 3, only step 3 (*referring to previous lecture*) was found to be conventional, with the rest of steps being optional steps in realizing the purpose of the

move. Moreover, step 3 is only conventional in computer science lectures while optional in literature lectures. The finding is somewhat different compared to Lee's (2009) study where he found that step 3 is a conventional step because it appeared in all of his ten lecture introductions from disciplines of health science, humanities and arts, social sciences and education, and physical sciences. His explanation is that the conventionality of the step can be considered as one of the experienced teachers' strategies in managing the class.

The differences between his and the current findings could be due to the different number of lectures analyzed and the disciplines from which the lectures were collected. The thirty lectures analyzed in the present study were only from two disciplines, while the ten lectures analyzed in Lee's (2009) study were from four disciplinary groups which include many disciplines. Only one lecture, "American Literature", out of his ten lectures was from the discipline of literature, with the rest nine lectures collected from disciplines that are very different from the current two disciplines. Therefore, it may not be fair to assume that step 3 is a conventional step in academic lecture introductions in general only based on the move analysis of a very limited number of lectures.

In terms of the reason why move 3 step 3 is only conventional in computer science, and optional in literature lectures in the current study, it may be attributed to

the interrelatedness across lecture topics. The computer science lectures of the courses collected in the current study usually share a general theme with all the topics of the lectures interrelated. Each lecture of a course is dedicated to building students' knowledge base of the main theme, and the knowledge that students required to move on to the following lectures is built upon what was established in previous lectures. This may be why move 3 step 3 is a conventional step in computer science lectures, for it is important for lecturers in computer science to construct a clear organization of knowledge web showing students how topics covered in each lecture are connected and how new knowledge can be built upon the known knowledge. Therefore, lecturers of computer science tended to keep reminding students of how the old and the new knowledge and concepts are related.

On the other hand, although some lecturers of literature did use more than one lectures to talk about one literary work, most of them actually focused on one single literary work in one lecture and then moved on to a new one in the next lecture. Considered the nature of introductory-level courses of the current data, it is likely that lecturers of literature would try to expand students' general knowledge of the course topic by providing extensive overviews of as many literary works as possible, instead of deeply focusing on a small number of literary works. This might be the reason that works covered within the current literature courses are not as interrelated as the

lecture topics in computer science courses are. Therefore, it may be why literature lecturers did not mention the contents covered in previous lectures as often as lecturers of computer science did, considering less relation among topics could be drawn.

Move 4 (*asking probing questions or raising issues*) and move 5 (*showing topic interest*) are both moves newly identified by the present study and are also specific to literature lectures. One possible explanation that move 4 is specific to literature introductions might be the interpretive nature of the literature discipline (Hyland, 2011). Since students in literature lectures are expected to finish reading the assigned texts before the class, lecturers might employ this strategy to highlight key issues for students to pay special attention to in the forthcoming lectures, and/or check students' comprehension of the works by having quick discussions with them.

Given that move 5 is realized by lecturers sharing personal viewpoints or quoting famous critiques' or writers' opinions with an aim to make the topics more intriguing to students. To achieve this, lecturers shared why they enjoyed the work or shared quotes to show students how other important figures in the field had to say about the work. This is considered especially essential in introductory courses, because it is important to "arouse students' interest in the study of Literature/sustain their initial enthusiasm and aim to increase it" from the beginning (Chambers & Gregory, 2006, p.

104). The fact that this move did not appear in computer science lectures may suggest that lecturers of computer science might not tend to share their personal viewpoints about the topics in lecture introductions. It may be exemplified by the fact that computer science lectures had relatively shorter lecture introductions compared to literature lecturers'.

In terms of the sequential patterning of the moves and steps in the beginning phase, it was found that the moves and the steps did not seem to move in a linear sequence. In some cases, they even appeared in reverse order. This finding is similar to Thompson's (1994) and Lee's (2009) findings, supporting Lee's (2009) proposition that the rhetorical move structure of lecture introductions is "generally a combination of moves and steps that are largely unpredictable" (p. 49). Previous and the present findings seem to suggest that there might not be a typical sequential pattern in lecture introductions, again confirming Thompson's (1994) proposition that it is possible that "lecture introductions do not need to have a preferred sequence of functional elements, in contrast with introductions in other academic genres" (p. 181).

One explanation for such finding may be attributed to the spoken nature of the lecture genre. Although its purpose is similar to the written genre of textbooks considering they both share pedagogical aims (Hewings & Henderson, 1987), its communicative purposes are beyond information delivery, but also include evaluating

materials and responding to students' questions. Considering the considerable processing burden imposed, it is very difficult for lecturers to present the discourse in a linear sequence in spoken genres as they could do in written genres (Lee, 2009), thus leading to the rather messy structure. Other explanation could be attributed to a lack of a conventional structure for lecture introductions, at least not as strictly-followed as the ones in written genres, such as research papers. Thus, lecturers are allowed greater freedom to plan their lecture introductions. Even with plans, "spontaneous decisions" could be made in lectures (Thompson, 1994, p. 181), causing the occurrence of changes in the planned structure.

In terms of the main body phase, Table 17 presents the comparison between the moves/steps identified in the literature and computer science lectures in terms of their frequencies. The comparison of the conventionality/optionality of move categories is showed in Table 18. The bold words indicate the differences in terms of the conventionality and the presence/absence of the move categories between the two disciplines.

Table 17. Comparison of the move and step categories identified in the main body phase of computer and literature lectures.

BEGINNING	**Computer science**	**Literature**
Moves/Steps	**Frequency (%; n=15)**	**Frequency (%; n=15;)**
M6: Announcing the topic	15 (100)	15 (100)
M7: Showing future course plan or lecture outline	9 (60)	11 (73.3)
M8: Defining the topic	**14 (93)***	**6 (40)**
M9: Describing the purpose	6 (40)	3 (20)
M10: Showing topic relevance	5 (33.3)	10 (66.7)
M11: Telling asides or anecdotes	**12 (80)***	**9 (60)**
M12: Contextualizing the topic		
S1: Describing the topic	13 (86.7)	15 (100)
S2: Explaining the topic	15 (100)	15 (100)
S3: Interpreting the topic	**0 (0)**	**15 (100)***
S4: Applying the knowledge	**13 (86.7)***	**0 (0)**
S5: Demonstrating the process	**15 (100)***	**0 (0)**
S6: Highlighting important information	9 (60)	7 (47)
S7: Referring to/reading the text	**0 (0)**	**14 (93)***
M13: Evaluating the topic and arguing for a viewpoint	15 (100)	15 (100)
M14: Referring to content discussed in previous lectures	8 (53.3)	9 (60)
M15: Interacting with students	**14 (93)***	**6 (40)**
M16: Summarizing the main points	9 (60)	7 (47)
M17: Pep talk	**3 (20)**	**0 (0)**
M18: Reminding students of upcoming assignment	2 (13.3)	4 (26.7)

Note. * = conventional

Table 18. Summary of conventionality of moves/steps in the main body phase of computer science and literature lectures

MAIN BODY	**Computer science**	**Literature**
M6: Announcing the topic	conventional	conventional
M7: Showing future course plan or lecture outline	optional	optional
M8: Defining the topic	**conventional**	**optional**
M9: Describing the purpose	optional	optional
M10: Showing topic relevance	optional	optional
M11: Telling asides or anecdotes	**conventional**	**optional**
M12: Contextualizing the topic		
S1: Describing the topic	conventional	conventional
S2: Explaining the topic	conventional	conventional
S3: Interpreting the topic	**n/a**	**conventional**
S4: Applying the knowledge	**conventional**	**n/a**
S5: Demonstrating the process	**conventional**	**n/a**
S6: Highlighting important information	optional	optional
S7: Referring to/reading the text	**n/a**	**conventional**
M13: Evaluating the topic and arguing for a viewpoint	conventional	conventional
M14: Referring to content discussed in previous lectures	optional	optional
M15: Interacting with students	**conventional**	**optional**
M16: Summarizing the main points	optional	optional
M17: Pep talk	**optional**	**n/a**
M18: Reminding students of upcoming assignment	optional	optional

Among the thirteen moves and seven steps identified in the current data, fifteen move/step categories are shared by the two disciplines, with 75% similarity between the move structures of the main body phases of literature and computer science. On other hand, there are one move category and four steps specific to certain disciplines.

Move 6 (*announcing the topic*) is a move shared by the two disciplines and is also conventional in both disciplines. Similar to the function of move 2 step 1 (*announcing the lecture topic*), it is employed by lecturers to articulate to students the topic they are going to focus on in the forthcoming lecture, which provides explicit signals to students regarding what the following talk will be about. It was therefore not surprising to see this move appearing in all of the current lectures for this move basically initiates the following moves.

Move 7 (*showing future course plan or lecture outline*), similar to the functions of move 1 step 3 (*looking ahead*) and move 2 step 3 (*outlining the lecture structure*) in the beginning phase, is a shared yet optional move in both disciplines. Despite an optional move, it was in fact employed by all of the ten lecturers in the present study.

Although move 8 (*defining the topic*) is a shared move by the two disciplines, its conventionality differs in terms of disciplines. It was found to be conventional in computer science lectures while optional in literature lectures. Considering that technical terms in computer science are usually based on established knowledge and are with definite and commonly-agreed definitions, to inform students of the common understanding of certain ideas in the field, lecturers of computer science may be more likely to present definitions of topics to students. On the other hand, the meanings of certain terms in literature works are more often open for interpretations and

alternative voices without standard definitions (Hyland, 2011). Lecturers of literature may be less likely to provide 'standard' definitions to students considered they are relatively less frequently seen in soft science disciplines. Therefore, the different nature regarding definitive definitions of ideas may explain why this move is conventional/optional in the two disciplines.

Move 9 (*describing the purpose*), similar to the function of move 2 step 4 (*presenting the aims*) in the beginning phase, is an optional move shared by the two disciplines. This move is also comparable to the strategy, "explain lesson aim", adopted by EMI instructors to facilitate students' comprehension in EMI lectures (Chen, 2017). In terms of disciplinary differences, this move was employed in more computer science lecturers than in literature lectures. Move 2 step 4 also shared similar distribution. Such results reveal that compared to lecturers of literature, lecturers of computer science seem to prefer to show the purpose, and provide rationale in terms of why something should be done before starting to talk about it.

Move 10 (*showing topic relevance*) is a shared but optional move in both disciplines. It is similar to the function of relevance markers (Deroey & Taverniers, 2012), thus considered an interactively oriented move. Despite being an optional move, it is not surprising to see the move employed in lectures, considered it is associated with the function to "distinguish between important points and irrelevant

information of the lecture" (Zare & Keivanloo-Shahrestanaki, 2017), which would be helpful to students' note-taking in lectures.

Move 11 (*telling asides or anecdotes*) is a shared move by the two disciplines, but it is only conventional in computer science lectures while optional in literature lectures. In fact, this move was employed by nine out of the total ten lecturers in the current study, which can thus be considered a common strategy employed in lectures. As long indicated in past research (Cashin, 1985), sharing personal anecdotes is a way to enhance a lecture, and humor can also "create an enjoyable classroom atmosphere, lessen students' anxiety, increase affect and liking for the instructor and the course, and facilitate students' willingness to participate in in class and out-of-class communication with instructors" (Zhang, 2005, p. 113).

The reason for the different conventionality of this move between the disciplines might be explained by the different extent of individual lecturers' internal consistency in using the move. Although all lecturers of computer science employed this move in almost all of their lectures, the lecturers of literature did not use this move as often. It appears that it is more common for lecturers of computer science to employ this move to lighten the mood and create a more positive and relaxing learning environment.

Move 12 (*contextualizing the topic*), which contextualizes where the topic is placed, is a shared move by both disciplines. It can be realized by seven steps. Step 1

(*describing the topic*) and step 2 (*explaining the topic*) are both conventional steps shared by the two disciplines. Considering that lecture is a pedagogical process genre (Thompson, 1994), one of its primary purpose is to inform. It is thus not surprising to see these two steps being conventional in lectures, regardless of different disciplines. The functions that the two steps serve are also comparable to the instructional language types found in EMI lectures on science (Chen, 2017), such as *describe phenomenon* and *provide explanations on causal relationships*. Considered both EMI lectures and academic lectures are sub-genres of lectures and share the same aim of information delivery, it is thus not surprising to see comparable functional types identified in the two sub-genres of lectures.

Despite step 1 being conventional in both disciplines, the foci of the description are quite different. As indicated by Deroey and Taverniers (2011) on lecture functions of different disciplines: "[t]he subject of descriptions naturally reflects disciplinary preoccupations" (p. 6), this can be reflected by the discourse realizing step 1 in the two disciplines. In computer science lectures, the descriptions were mainly about the functions of some methods or where and when one tool could be used. On the other hand, the descriptions were usually about the background information of a literary work such as its historical context, the stories about the researcher, or where the work was situated.

While shared by the two disciplines, step 6 (*highlighting important information*) is an optional step in both disciplines. In fact, this step was employed by all the lecturers in the current data to realize one of the purposes of move 12. Yet, no lecturers were found to use the step in every of their lectures. The step thus ended up being considered an optional step. Its function does not only include highlighting key points for students but also calling for students' attention. The lecturers might therefore use the step as a way to keep students focused and informed them of the key ideas of a topic.

Except for steps 1, 2 and 6, the rest four steps are discipline-specific. Among them, step 3 (*interpreting the topic*) and step 7 (*referring to/reading the text*) are specific to the literature lectures. In literature lectures, lecturers usually guide students to read selected literary text segments followed by lecturers' interpretations of the authors' intended meanings behind the texts, critical evaluations, and their own personal opinions on the work. Moreover, these two steps are considered core to the reading process in literature lectures, which is composed of the three elements of analysis, interpretation, and evaluation (Chambers, 2010; Chambers & Gregory, 2006). Literature teachers are expected to provide "a structured, and staged, approach to reading different literary texts/genres…" through this process (p. 111). However, none of the lecturers of computer sciences in the current study directly refer to texts in

the textbook or interpret the meaning of some passages in lectures. Instead, they focused more on providing fact-based explanations or evaluations based on statistics and/or evidences, rather than giving interpretations that are rather subjective. Therefore, this might explain why steps 3 and 7 only appeared in literature lectures.

On the other hand, step 4 (*applying the knowledge*) and step 5 (*demonstrating the process*) are specific to computer science lectures. In computer science lectures, lecturers usually tend to relate the theory, concept, or tool introduced in class to real-life usage or test different solutions to current problems, which reflects its nature as a hard-applied discipline (Becher, 1994), and one of its disciplinary aim of being problem-solving (Clark, 2003). The primary aim of literature lectures usually focuses on developing students' skills to read and interpret literary works critically through exploring the authors' intentions or implied messages in the text (Chambers & Gregory, 2006). Also, literary works might more often be used to draw connections or mirror the current issues, but are not usually applied to solve real-life problems, which might be the reason that step 4 did not appear in literature lectures.

In terms of the reason that step 5 (*demonstrating the process*) is conventional and specific to computer science lectures, lectures of this discipline usually involve lecturers explaining and/or demonstrating how something is done. Therefore, lecturers of computer science usually provide step-by-step guidance through demonstrating the

coding process or presenting the reasoning process physically. This finding is also similar to Derory and Taverniers (2011) finding, where they found the *demonstrating* function more common and particularly associated with the physical sciences compared to arts and humanities, life sciences, and social sciences. They explained that the reason may be attributed to the importance of problem-solving orientation in the physical sciences. This can probably explain why step 5 did not appear in the current literature lectures, but was prevalent in computer science lectures.

Move 13 (*evaluating the topic and arguing for a viewpoint*) is a conventional move shared by the two disciplines. It was employed by all the lecturers in all the lectures, which revealed the importance of this move in academic lectures. As long indicated in Thompson (1994), “evaluating”, along with the other two important elements “informing” and “organizing”, create the “particular character of lecture monologue” (p. 172). This suggests that evaluation actually is an important part in shaping the lecture genre, as exemplified by its high occurrence in the current lectures.

Despite being a conventional move in both disciplines, the particular functions the lecturers of the two disciplines tried to achieve through this move were quite different. In computer science lectures, lecturers provided evaluations of methods or tools in terms of their advantages and disadvantages, or the potential issues that might

appear along with the application such methods or tools. On the other hand, in literature lectures, lecturers offered critical reviews regarding the literary works or argued for a viewpoint by showing students textual evidence from the texts.

Similar variations in terms of evaluation functions between lectures of different disciplines were also reported in Deroey and Taverniers (2011). In their study, evaluations in disciplines that are open to different interpretations, such as humanities and arts, were often expressed as "assessment of significance, adequacy or certainty" (p. 13). Yet, for lectures focusing on skill development or drawing on experimental evidence, evaluations were provided to evaluate certain tools or methods, or indicated "whether something was established knowledge" (p. 13).

Move14 (*referring to content discussed in previous lectures*) is an optional move in both disciplines. Its function is similar to move 3 step 3 (*referring to earlier lectures*) in the beginning phase. The fact that this move appeared in both the beginning and main body phases and in both disciplines suggests that lecturers across disciplines seem to refer to topics mentioned in previous lectures wherever appropriate without being limited to different phases. Similar to the function of move 3 step 3, this move also "permits lectures to build on what students already are familiar with" (Lee, 2009, p. 49). It is thus not surprising to see that the experienced

lecturers employed this move to help students draw connections between new ideas and known ideas in the main body phase as well.

Despite shared by the two disciplines, move 15 (*interacting with students*) was found to be a conventional move in computer science lectures but an optional move in literature lectures, which was mostly accomplished by lecturers and students asking and answering questions. Based on Crawford Camiciottoli's (2008) classification of question functions, most questions identified in move 15 can be considered audience-oriented questions. That is, the functions of questions were to elicit students' responses, check comprehension and/or request clarification. This finding is similar to Chang's (2012) study on lecture questions where she also found that compared to content-oriented questions (*focusing information* and *stimulating thought*), audience-oriented questions were much more frequently employed in lectures, regardless of disciplines.

Interestingly, although lecturers of literature did not seem to employed this move as often as lecturers of computer science in the main body phase, they actually more frequently employed a similar move, move 4 (*asking probing questions or raising issues*), than lecturers of computer science in the beginning phase. This suggests that it is more common for lecturers of computer science to ask questions to interact with

students in the main body phase while lecturers of literature tended to ask questions in the beginning phase to stimulate thought.

Move 16 (*summarizing the main points*) is an optional move shared by the two disciplines. Nine out of ten lecturers in the current study employed the move in their lectures while it was not used consistently by the lecturers in all their lectures, thus classified as an optional move. This move shares the similar function of "conclusion phase" identified by Young (1994) in academic lectures, where lecturers summarize what has been discussed to make sure students have grasped the key ideas.

Interestingly, Young (1994) considered this move important because of its metadiscoursal feature and she also claimed that this move would recur as new topics are announced. However, this move was found to be an optional move in both disciplines in the present study. It seemed that although some lecturers tended to summarize ideas when they finished one topic out of many topics they aimed to cover in one lecture, some lecturers preferred to provide an overall summary of all the ideas mentioned or simply highlighted the ones that were more essential in the end the lecture, which, in the present study, was identified as move 19 step 1 (summarizing the lecture content) in the ending phase. That is, summarizing lecture content is still essential in lectures, as noted by Young (1994), but it was found to appear either right after one topic was done discussing or after all the topics were covered.

Move 17 (*pep talk*) represents the instances when lecturers encourage students to keep going and offer comfort. This move is specific in computer science lectures in the main body phase. The reason why this move only appeared in computer science lectures might be that lectures of computer science not only involve improving students' understanding of abstract theories or concepts, but concern actually teaching students how to apply and implement something based on the knowledge. Because intensive practices are needed in order for students to achieve the desired learning outcome, the lecturers of computer science may tend to provide comfort along the way since they themselves should understand how painstaking the process could be based on their own past learning experiences.

On the other hand, despite great interpretations and explanations provided in literature lectures from the lecturers, one of the primary goal of literature courses is to improve students' ability of critically interpreting a literary work independently based on textual clues, and the understanding of the background of the work and the author. Learning to appreciate and criticize a literary work is less about repeated training of skills, which may be why literature lecturers did not seem to apply move 17 very often.

In terms of the move structures of the ending phase of the two disciplines, Table 19 presents the comparison of the moves and steps appearing in computer science and

literature lectures in terms of their frequencies, and Table 20 presents the comparison of their conventionality and optionality of the two disciplines. The bold words indicate the differences in terms of the conventionality and presence/absence of the move categories between the two disciplines.

Table 19. Comparison of the move and step categories identified in the ending phase of computer and literature lectures.

	Computer science	**Literature**
Moves/Steps	**Frequency (%; n=15)**	**Frequency (%; n=15)**
M19: Concluding the lecture		
S1: Summarizing the content of the lecture	8 (53.3)	6 (40)
S2: Indicating the end of a lecture	4 (26.7)	2 (13.3)
M20: Cooling down		
S1: Looking ahead	**10 (66.7)**	**13 (86.7)***
S2: Housekeeping	2 (13.3)	3 (20)
S3: Addressing non-course related matters	1 (6.7)	1 (6.7)
M21: Farewell	5 (33.3)	2 (13.3)

Note. * = conventional

Table 20. Summary of conventionality of moves/steps in the ending phase of computer science and literature lectures

ENDING	Computer Science	Literature
M19: Concluding the lecture		
S1: Summarizing the content of the lecture	optional	optional
S2: Indicating the end of a lecture	optional	optional
M20: Cooling down		
S1: Looking ahead	**optional**	**conventional**
S2: Housekeeping	optional	optional
S3: Addressing non-course related matters	optional	optional
M21: Farewell	optional	optional

All of the move and steps categories in the ending phase are found to be shared by the two disciplines. However, none of the move/step categories are conventional in both disciplines, with only the conventionality of one step being different in terms of disciplines.

Move 19 (*concluding the lecture*) is found to be a move that is more common in computer science lectures than literature lectures. All the lecturers of computer science employed the move in at least two-thirds or all of their lectures, with either step used to realize the communicative purpose of this move. That is, despite using different steps, computer science lecturers appeared to generally employ this move. On the other hand, although four out of the total five lecturers of literature were found to use this move, not all of them employed this move consistently in all of their lectures. In other words, one lecturer may use the move in one of her/his lecture but

not in the others. This might be the reason why move 19 was found to be a move more general in computer science lectures even though it was employed by 80% of the lecturers of literature.

Despite an optional step, move 19 step 1 (*summarizing the content of the lecture*) was employed by 80% of the total lecturers in 46.7% of the lectures. Surprisingly, the step only appeared in 3 out of the total 56 lectures (5.4%) in Cheng's (2012) study on lecture closings, which led her to conclude that most lecturers do not end lectures by summarizing the key points. Disciplinary variation may play a part in the different findings between the present study's and Cheng's. Since the lecture closings analyzed by Cheng were from a variety of disciplines which she did not provide the exact information regarding the disciplines where these lecture closings were from, the rather high occurrence of this step in the current data may suggest that the use of this step may vary depending on different disciplines. This finding thus also supports that discipline does play a part in affecting move structures.

A different reason could be the lecturer's experiences. As suggested by previous studies (Davis, 2009; McKeachie, 2002), it is important for teachers to draw explicit conclusions, because it could demonstrate continuity between what students have learned and what they will be learning, or provide a closure. Because the current lecturers are all full professors, who can be considered experienced teachers, they may

see the value of summaries for students based on their rich teaching experience in the fields. Thus, this might be why there was a higher proportion of lecturers employing this step in the current study.

In move 20 (*cooling down*), its constituent step, *looking ahead*, is conventional in literature lectures but optional in computer science lectures. Considering it is essential for students to preview the literary work and have a basic idea of the plot before the lecture, the lecturers of literature may tend to use this step as a way to advise students to preview the literary work to be discussed in the next lecture. Due to the growing problem that students fail to finish the assigned reading before class (Chambers & Gregory, 2006), literature lecturers may thus have the tendency to inform students of the upcoming topics, which may encourage students to preview the text so they would be able to keep up with the lecture. Similar result was also found in Cheng's (2012) study where many teachers were also found to tend to inform the student what they intend to do in the next lecture.

Also, both the present study and Cheng (2012) found that move 20 step 2 (*housekeeping*) was not employed often in lecture endings. Moreover, a similar step in the beginning phase, move 1 step 2 (*housekeeping*), and a similar move in the main body phase, move 18 (*reminding students of upcoming assignment*), were also found not often appearing in the current lectures as well. A further comparison of the

occurrences of these move and steps with similar functions revealed that although they were employed in all of the current lectures, different lecturers actually employed them in different phases. That is, the function of *housekeeping* may still be considered one of the common features in academic lectures, but it should also be noted that lecturers' individual idiosyncrasies do play a role in influencing in which phase the strategy is employed.

Overall, based on the findings, it could be suggested that lecturers of computer science tended to finish a course through either summarizing the contents or key points, or directly indicating the end of a lecture. However, it is conventional for literature lecturers to end a lecture after matters related to future lectures are addressed, as exemplified by the conventional step of *looking ahead* in literature lectures. This suggests that it is important for lecturers of literature to offer students information regarding future lectures, such as topic to be covered in upcoming classes. The differences in terms of how lecturers of different disciplines end a lecture support the present proposition that discipline is a factor affecting the move structures in academic lectures. The findings also reveal the importance for novice lecturers of different disciplines to know the conventions in conducting a lecture in their own disciplinary communities.

The current findings are quite different from Cheng's (2012) study where she found no obligatory rhetorical strategies in lecture endings, and suggests that "more often lecturers continue the lecture until the very end of the class time and close the lecture briefly" (p. 239). In contrast, the present findings found that there are indeed conventional moves/steps in lecture endings specific to different disciplines and thus suggest that lecturers do seem to plan and structure the ending phase of their lectures with intended purposes, despite the use of very different rhetorical strategies.

4.2.4 Summary

In this section, the move structures of the literature and computer science lectures were presented and compared. In the beginning phase, 81.3% of the move structures of the two disciplines are similar, with two moves and one step specific to certain disciplines. Similar to previous findings on lecture introductions (Lee, 2009; Thompson, 1994), both moves 2 (*setting up lecture framework*) and 3 (*putting the topic in context*) were also found to be very common in the current lectures, regardless of disciplines. This again suggests the importance of the two moves in structuring lecture introductions and in accomplishing the communicative purposes of this phase. Based on the moves and steps that are specific or conventional to certain disciplines, it could be suggested that in computer science lectures, it is conventional for lecturers to refer to the contents covered in previous lectures to highlight the

importance as well as to help students make connections between topics, especially in the beginning phase. Particularly in literature lectures, probing questions and topic interests were used as strategies by lecturers to interest students in lecture topics in this phase.

In the main body phase, 75% of the move structures of the two disciplines are similar, with one move and three steps specific to certain disciplines. The differences in this phase between the two disciplines in terms of move structures mainly lie in the strategies employed in the two disciplines to contextualize the topic. Specifically in computer science lectures, strategies regarding applications of knowledge and demonstrations of process are conventional, while interpretations of text segments and direct references to texts are specific strategies employed in literature lectures. It was also found that more anecdotes and interactions with students through questions occurred in computer science lectures. Instead of often asking questions in the main body phase, lecturers of literature appeared to have the tendency to raise questions in the beginning phase. Moreover, many moves and steps were found to be comparable to the functions identified in previous studies based on university lectures (Deroey & Taverniers, 2011) and EMI lectures (Chen, 2017). This suggests the identified moves and steps can characterize the lecture genre and reflect features of pedagogical-oriented genres as well.

In terms of the ending phase, all of the identified moves and steps are shared by the two disciplines. However, none of them were found to be both conventional in the two disciplines. In ending a lecture, the comparison of the conventionality of the moves between the two disciplines revealed that a lecture would be explicitly concluded or ended with summaries of the lecture contents in computer science, while it seems to be essential for lecturers of literature to inform students of future plan, probably as a way to encourage students to preview the appropriate text as a preparation for future lectures. Moreover, different from previous findings that lecturers usually end lectures rather briefly without seemingly planned structure (e.g., Cheng, 2012; Smaraj & Petrovic, 2015), the finding of the current study revealed that there are indeed plans and purposes behind the ways in which a lecture is ended and the strategies used to show lecturers' intentions.

Overall, in terms of the move frameworks representing the move structures of the two disciplines, approximately 80% of all the move categories were shared by the two disciplines, leaving about 20% of the move categories specific to certain disciplines. This result revealed that most move categories identified in the current data appeared in both disciplines of literature and computer science, suggesting the high similarity between the move structures across disciplines. Although a relative small proportion out of the total move categories (20%) were found to be discipline-

specific, this result still confirmed that there are indeed disciplinary variations in terms of move structures in lectures.

It should be noted that the discipline-specific moves should not be overlooked. In fact, the moves specific to certain disciplines further highlighted the different nature of the two disciplines: moves specific to computer science are associated with demonstration and application, while moves specific to literatures are associated with interpretation and text reference. Such differences revealed the different foci that the two disciplines specifically place in lectures, with literature lectures being text-oriented and computer sciences lectures centering on practical purposes.

Despite the long underexplored influence of disciplines on move structures in lectures in previous studies (e.g., Cheng, 2012; Lee, 2009; Thompson, 1994), it was revealed by the current study that disciplines indeed play a part in influencing the move structures of lectures. Also, the discipline-specific moves identified in the current study can be very helpful pedagogically, especially to EAP teaching and learning. The differences between the move categories in literature and computer science lectures can be used as examples for EAP teachers to help make their students aware of disciplinary variations in terms of move structures. Although only two disciplines were investigated in the current study, the move frameworks of the two disciplines identified in this study may be considered to roughly represent the lecture

features of the soft and the hard disciplines respectively. The two move frameworks may thus be used as materials to show students the different nature between the soft and the hard disciplines and make them aware of the potential differences of the moves used in lectures across disciplines.

Despite a relative high overlapping rate between the move categories appearing in literature and computer science lectures, it should be noted that not all of the shared moves are conventional in both disciplines. In fact, the conventionality of approximately one-fifth of the shared moves varied with disciplines. This finding suggests that even though the move structures of the two disciplines were quite similar, there were still disciplinary differences in terms of the extent to which a shared move was employed in certain disciplines, which again emphasized the potential influence of disciplines on the use of moves in lectures of different disciplines.

Moreover, these shared moves with different conventionality between disciplines are especially important for they could reflect the different conventions in terms of how the two disciplines structure their lectures rhetorically. The current identification of the varied conventionality of the moves shared by the two disciplines thus further highlighted the crucial moves essential to certain disciplines.

The findings can also provide pedagogical implications to EAP teaching and learning, as well as to teacher education. EAP teachers can make their students aware of the different conventionality across move categories, as a way to highlight the important moves that students should especially pay attention to, as well as the peripheral ones that may potentially appear in lectures. As for L2 teachers and novice teachers, the current findings could help them familiarize themselves with the common rhetorical patterns in lectures by checking the conventional moves identified in the current study when planning their lessons. For example, lecturers of computer science were found to conventionally apply the move to refer to contents discussed in previous lessons in the beginning phase, and lecturers of literature seemed to prefer to explicitly inform the students of what will be covered in future lessons in the ending phase.

In sum, the comparison between the two move structures of the two disciplines revealed that there are indeed disciplinary differences in terms of move structures of literature and computer science lectures, based on the different number of move/step categories employed between disciplines, the move categories typical to certain disciplines, as well as the varied conventionality of the shared move categories between disciplines. Therefore, based on the current findings, the present study suggested that academic discipline is an essential factor affecting move structures of

academic lectures. Moreover, disciplines should be taken into consideration as EAP teachers prepare lessons for introducing move framework of lectures to EAP students. Novice teachers or L2 teachers could also benefit from the current findings as they plan their lectures by comparing their lecture structures with the conventional ones in their own disciplines.

4.3 Frequent lexical bundles in different lecture phases

In addition to investigating the rhetorical moves appearing in academic lectures and disciplinary variations between move structures of literature and computer science lectures, the present study also aimed to identify the frequent lexical bundles in different lecture phases and examine how they function to structure different phases. By identifying boundaries between the beginning phase and the main body phase, and between the main body phase and the ending phase of each lecture, three corpora representing the three lecture phases were constructed for the identification of the frequent lexical bundles in each phase. The identified lexical bundles were further examined, particularly those functioning to organize discourse in different phases. The following section presents the lexical bundles identified in the three lecture phases and discusses their roles in structuring different phases.

4.3.1 Frequent lexical bundles in the beginning phase

The search of lexical bundles in the beginning phase returned seventeen 4-word lexical bundles, four 5-word lexical bundles and one 6-word lexical bundle. Table 21 below presents the 4-word, 5-word, and 6-word lexical bundles identified in the beginning phase. The lexical bundles are arranged in alphabetical order. The bold ones are the lexical bundles serving the discourse-organizing function.

Table 21. Lexical bundles in the beginning phase

4-word lexical bundles	
a little bit about	the end of the
and I want to	the way in which
and we're going to	**to talk a little**
going to look at	**today we're going to**
going to talk about	we're going to do
is going to be	**we're going to talk**
of the things that	what we're going to
one of the things	you want to do
talk a little bit	
5-word lexical bundles	
one of the things that	**to talk a little bit**
talk a little bit about	**we're going to talk about**
6-word lexical bundles	
to talk a little bit about	

Considering the rather small size of the corpus of the beginning phase, it was not surprising to find very few 5-word and 6-word lexical bundles identified in the corpus. Lexical bundles with shorter length were found to be embedded in those with longer length. For example, for the one 6-word lexical bundle “to talk a little bit about” identified in the corpus, two 5-word lexical bundles, “talk a little bit about”

and “to talk a little bit”, and three 4-word lexical bundles, “a little bit about”, “talk a little bit”, “to talk a little”, are actually embedded in it. In the beginning phase, it was found to be used by the lecturers most frequently as they announced the lecture topics. This bundle does not only signal new topics, but also imply the direction of the ensuing talk, thus associated with the function of metadiscourse, which is one of the frequent functions that bundles serve as they are used to organize the discourse (Biber et al., 2004; Liu & Chen, 2020; Simpson-Vlach & Ellis, 2010).

In fact, many of the lexical bundles identified in this phase are associated with the discourse organizing function (Biber et al., 2004; Liu & Chen, 2020; Simpson-Vlach & Ellis, 2010), rather than serving other functions, such as stance or referential functions. They were predominantly used to realize the move 2 (*setting up lecture framework*) and move 1 step 3 (*looking ahead*), especially as lecturers were announcing lecture topics, outlining lecture structures, informing students of future plans, and/or talking about the focus of the forthcoming talk.

The linguistic features associated with these lexical bundles are the use of future tense, the modal/semi-modal “will” and “be going to”, and personal plural pronoun “we”, as illustrated in examples 126 and 127. These bundles provide signals in terms of what the lecturers are going to do/talk about next and/or what they intend to do in the ensuing talk.

(126) So **we're going to talk about** irrationals. (C-Dv-02)

(127) What **we're going to do** today is, we're going to…and secondly **we're going to talk about** tools you can use to help understand those pieces of things.

(C-Gr-01)

Overall speaking, the identified discourse-organizing lexical bundles provide linguistic clues from lexical items that reflect the communicative purpose of the beginning phase in academic lectures, which is "for the lecturer to establish an interpretive framework for the audience to use as they listen to the rest of the lecture" (Thompson, 1994, p. 174). Moreover, the fact that most lexical bundles identified in this phase served a discourse-structuring role generally reflect the communicative purpose of this phase, which is to prepare students for what is to come in the remainder of the lecture.

As revealed previously, there does not seem be a common sequential patterns in terms of the occurrences of the moves in the beginning phase of academic lectures. Despite that, the many lexical bundles performing functions to signal the structure of the lecture and the directions of the talk may suggest that lecturers are still "aware in designing a lecture introduction of the need to set up the framework…and provide a context for new information to come" (Thompson, 1994, p.182).

4.3.2 Frequent lexical bundles in the main body phase

In the main body phase, twenty-nine 4-word lexical bundles, eight 5-word lexical bundles and five 6-word lexical bundle were identified. Table 22 below presents the 4-word, 5-word, and 6-word lexical bundles identified in the main body phase. The lexical bundles are arranged in alphabetical order. The bold ones are the lexical bundles serving the discourse-organizing function.

Table 22. Lexical bundles in the main body phase

4-word	
a little bit of	less than or equal
and I want to	on the other hand
and I'm going to	so I'm going to
at the end of	so this is a
at the same time	than or equal to
going to be the	**that is to say**
going to do is	the end of the
I want to do	the size of the
if I want to	the way in which
if you look at	to be able to
I'm going to do	we're going to do
I'm not going to	**what I want to**
is a kind of	what we're going to
is going to be	you can think of
it turns out that	
5-word	
at the end of the	we're going to do is
I want to talk about	**we're going to talk about**
I'm going to show you	what I want to do
less than or equal to	what we're going to do
6-word	
what we're going to do is	the last thing I want to
I'm going to show you a	what I want to do is
is greater than or equal to	

Among the bundles identified in the main body phase, most of them are associated with the stance and the referential functions signaling lecturers' intentions or specifying an entity or attributes of an entity, such as time, place, amount and relations (Biber, et al., 2004; Liu & Chen, 2020; Simpson-Vlach & Ellis, 2010). Yet, lexical bundles associated with discourse-organizing functions are relatively more prevalent in the beginning phase compared to the main body phase. The distribution

of the functional bundles reveals the different communicative purposes of the two phases. In terms of the beginning phase, it is essential for teachers to provide a framework of the lecture for students to have an overview of what would be included in the day's lecture. Therefore, it is expected to see more lexical bundles serving discoursing-organizing role appear in the beginning phase.

On the other hand, the focus of the main body phase is actually on the topics. Therefore, more bundles were therefore found to be employed to describe topics, specify features, or show contrasts. Based on the results, it could thus be suggested that although bundles serving different discourse functions appeared in different lecture phases, those with a role of organizing discourse structure and showing speakers' intentions are relatively predominant in the beginning phase, while those associated with referential function and expressing speakers' stance are more prevalent in the main body phase.

This finding reflects that academic lectures, similar to classroom teaching, also combine "the functional and communicative priorities of involved discourse…with the priorities of informational written discourse…" (Biber et al., 2004, p. 397). This study further reveals that involved discourse seems to appear more often in the beginning phase while dense informational discourse is often seen in the main body phase of lectures.

Although previous bundle studies tend to assign one distinctive function to individual lexical bundles, it is suggested by Biber et al. (2004) that bundles can serve multiple functions even within one instance. The analysis of the lexical bundles along with the moves they appeared in the main body phase supports this proposition, because it was found that in some instances, one lexical bundle can occur in a discourse with multiple moves embedded and overlapped, as illustrated in example 128:

(128) When we turn to Jameson next time, we'll see that in both cases–and we'll be working a little bit with this today, too, when we turn to Benjamin– we'll see that in both cases it has to do with **the way in which** we are brought up short by the kind of criticism which argues that somehow standing behind our conception of reality and our understanding of our place in the world…(L-F-03)

In this example, the local function of the lexical bundle "the way in which" on the sentence-level was to specify that criticism that students were already familiar with, which was a reference to an intangible attribute of an entity. Yet, from a more global perspective of rhetorical move structure, this bundle appeared in moves that not only provided a general overview of the day's and the following lectures, but also related new ideas to students' existing knowledge.

This suggests that identifying the local discourse function of a lexical bundle may not be sufficient to see its role in the discourse without taking into account the purpose of the discourse, i.e. the move of the text segment, where it appears in. The present study thus highlights the importance to relate the functions of lexical bundles and the communicative purposes of the moves to better understand how lecture genre is organized linguistically and rhetorically. As also suggested by Cortes (2013), although the general functions of lexical bundles in lectures can reveal their roles on a sentence-level, it is important to investigate the relationship of them and the moves where they are used in.

4.3.3 Frequent lexical bundles in the ending phase

In the ending phase of the current academic lectures, only three 4-word lexical bundles were identified, which are “I want you to”, “we’ll be talking about”, and “the rest of the”. The reason why only few lexical bundles were identified in this phase might be due to the rather limited corpus size of the ending phase. Given that lecturers’ individual idiosyncrasies are likely to play a part to some extent in terms of the length of the discourse in different lecture phases, it would not be sure how many words there would be in different phases of a lecture before a detailed discourse analysis is carried out. The rather small proportion of the ending phase in lectures seem to support the finding of Samraj and Petrovic (2015) where the ending phase of

lectures was considered rather optional or was even missing in some cases. This might explain why the word count of the current corpus of the ending phase is comparatively much smaller than the other two corpora representing the beginning and the main body phases of the current lectures.

In terms of the lexical bundles serving a discourse-organizing role in the ending phase, interestingly, only the lexical bundle "we'll be talking about" identified in this phase serves the discourse organizing function. It was usually employed to realize move 20 step 1 (*looking ahead*) in particular when lecturers announced what the next lecture topics or contents would be about, as illustrated in examples 129 and 130. As discussed previously, the communicative purpose of this step is both to encourage students to attend future lectures and to directly/indirectly advise students to preview the materials for the following lecture.

(129) On Tuesday of next week, **we'll be talking about** the New Historicism. (L-F-03)

(130) So, for next time you'll read Book Three...**We'll be talking about** Milton's blindness. (L-R-02)

4.3.4 Summary

Section 4.3 presents the frequent 4-word, 5-word, and 6-word lexical bundles appearing individually in the three phases of the current lectures: the beginning, the

main body, and the ending, and discussed their roles in structuring and achieving the communicative purposes of the three phases. A total of twenty-two lexical bundles were identified in the beginning phase. More than one-third of the bundles were found to be associated with the discourse functions of discourse organization, which were often employed by lecturers to realize move 2 (*setting up lecture framework*) and move 1 step 3 (*looking ahead*) in particular. In terms of the main body phase, forty-two lexical bundles were identified, with most of them associated with the functions of stance and referential, and much fewer of them (21.4%) serving a discourse-organizing role.

Based on the differences among the predominant functions of the lexical bundles in different phases, different communicative purposes of different phases could be reflected. In terms of the beginning phase, since lecturers in this phase would tend to provide an overview of the upcoming lecture and provide information regarding the lecture structure to students so they would know what to expect later, it was not surprising to see many more lexical bundles serving the role of discourse organization and intention. In terms of the main body phase, since the focus of this phases is about the topic itself and where dense information relating to the topic would be provided, many more lexical bundles were thus found to serve the role to describe, specify, compare, or evaluate the topic. Although only one lexical bundle was identified to

serve the discourse-organizing function in the ending phase, the role it played in the phase also reflect part of the communicative purposes of the phase, which is associated with the provision of the information regarding future plans.

It has been long established by Swales (1981) that lexical items could serve as key markers for the identification of certain moves. The current analysis of the discourse functions of the lexical bundles and how they signaled certain moves in different phase confirms that lexico-grammatical clues, such as the ones provided from lexical bundles, could help signal certain moves in lecture phases, and reflect the communicative purposes of a phase as well. This supports Hyland's (2008) proposition that lexical bundles are "important building blocks of coherent discourse and characteristic features of language use in particular settings" (p. 8). In the current lectures, the identified lexical bundles can be considered "text building blocks" that help to construct the discourse of and partially fulfill communicative purposes of different lecture phases. (Biber et al., 2002, p. 443)

As Cortes (2013) pointed out, both lexical bundles and move types share a characteristic of being building blocks. Lexical bundles are considered "lexico-grammatical building blocks associated with basic functions used to bind the text together" (p. 36), and moves can be considered "main building blocks" of a genre (Biber et al., 2007, p. 53) and as "segments of discourse that provide the building

blocks of texts" (Biber et al., 2007, p. 9). By investigating both the lexical bundles in academic lectures and their relationship with the phases and with the moves they are most associated with, the present study reveals the connections between the organizational and lexico-grammatical patterns that are used to structure different lecture phases.

Furthermore, a comparison of the frequent lexical bundles identified in the three phases revealed that there were no lexical bundles appearing across all of the three phases. However, seven lexical bundles were found to appear in both the beginning and the main body phases, which are: *and I want to*, *is going to be*, *the end of the*, *the way in which*, *we're going to do*, *we're going to talk about*, and *what we're going to*. Among them, four of them are stance bundles expressing speakers' intention; two are referential bundles indicating time and/or place, and specifying entities; only one is discoursing organizing bundle serving as a metadiscoursive device.

The identification of the cross-phase lexical bundles may suggest that some lexical bundles are generally employed in lectures, regardless of phases. This finding again emphasized the important role of lexical bundles in structuring lecture discourse. Moreover, although the characteristics of different phases may be reflected by the functions that lexical bundles serve the most in individual phases, the function of the lexical bundles shared across different phases may further reveal the feature of

the lecture genre. In the case of the current finding, stance bundles were found to be used across different phases the most. This further reflects the instructional nature of lecture genre, where lecturers would tend to guide students through the lecture by providing them with clear information regarding what to expect next and provide evaluations in terms of lecture topics.

CHAPTER FIVE

CONCLUSION

5.1 Summary of major findings

The aims of the current study include the identification of the overall move structures of academic lectures, the comparison between the move structures of the two disciplines of literature and computer science to seek whether discipline is a factor affecting move structure of academic lectures, and the role of lexical bundles in structuring and accomplishing the communicative purposes of different lecture phases. The following section presents the major findings regarding the three aims of the current study.

In terms of the rhetorical move structures of academic lectures, the present study further expanded the current understanding of the move framework of academic lectures. Unlike the rather limited foci on researching move structures in specific phases in previous studies (Cheng, 2012; Lee, 2009; Thompson, 1994), the overall rhetorical move structures of academic lectures, including the beginning, main body, and ending phases, were analyzed in the current study. Moreover, compared to the moves identified in previous studies (Cheng, 2012; Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994), this study not only identified many more move categories,

but also added more move categories essential to lecture genre but had not been identified in the previous studies to the present move framework of lectures.

The proposed move framework contains a total of twenty-one moves and twenty-three steps based on the current lecture data. Among them, eleven moves and five steps were added by the present study based on the current lecture data to the beginning and the main body phases, in addition to the move categories included in previous move frameworks (Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994). In particular, two additional moves and one step were added to the beginning phase, and nine new moves and four steps were identified in the main body phase.

The identification of the additional moves is essential because many important lecture functions can be reflected by the newly-identified move categories, which also highlight the features of the lecture genre that had not been captured in previous studies (Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994). More particularly, the added move category, move 12 step 6: *highlighting important information*, is potentially associated with lecture comprehension, recall and note-taking (Björkaman, 2011; DeCarrico & Nattinger, 1998; Jung, 2003). Move 13 (*evaluating the topic and arguing for a viewpoint*) reflects the important 'evaluating' function of lecture genre (Biber, 2006; Deroey & Taverniers, 2011; Mauranen, 2002; Thompson, 1994; Young, 1994). Other important lecture functions, including, 'informing', 'elaborating'

(Deroey & Taverniers, 2011), and 'interaction' (Thompson, 1994; Young, 1994), have been captured respectively in move 12 step 1 (*describing the topic*), move 12 step 3 (*interpreting the topic*), move 15 (*interacting with students*) and M17 (*pep talk*). Moreover, this study further identified many more moves that reflect the wide variety of strategies employed by lecturers to facilitate students' lecture comprehension (e.g., M12S5: *demonstrating the process*) or raise students' interests (e.g., M10: *showing topic relevance*, M11: *telling asides or anecdotes*).

As for the ending phase, a new framework has been proposed in the present study to describe the move structure of this phase through a substantial revision on the existing framework of lecture closings (i.e., Cheng, 2012). In particular, the revision includes: extending Cheng's (2012) move-only framework into a framework of dual scheme containing both moves and steps to more clearly show how communicative purposes of different moves are realized by specific steps, merging similar moves together to avoid unnecessary redundancy, and dividing moves with multiple functions into individual moves with specific functions to make the purpose of each move more concise. Through the revision, the move structure of the ending phase in lectures can be more clearly presented with the more organized move framework proposed by the current study.

Two potential contributions of the current study can be highlighted based on the discussions above: for one thing, this study proposed a move framework of lectures more extensive than previously established ones (Cheng, 2012; Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994), which can serve as a helpful reference for future analysis on entire move structures of lectures of other disciplines; for the other, the current study identified new move/step categories reflecting important features of lecture genre that had not been captured previously, which further added to the current understanding regarding how lectures are rhetorically structured.

Also, these findings can be of potential pedagogical value, especially to EAP instructions. The move categories shared by the current and the previous move frameworks can be considered core moves in structuring lectures. The added moves can be seen as supplements, specifying the moves that could potentially appear in lectures.

The identified move framework allowed the present study to further analyze and generate the move structures of the literature lectures and computer science lectures. A further comparison between the move structures of the two disciplines reveals differences in terms of the number of move categories employed to structure the lectures of the two disciplines. In the move structure of literature lectures, there are twenty moves and twenty steps. On the other hand, the move structure of computer

science is composed of nineteen moves and twenty-one steps. Although the total of the move/step categories used in the lectures of the two disciplines are the same, the categories appearing in the two disciplines are actually quite different.

In fact, a comparison between the move categories appearing in the two disciplines also revealed that approximately 20% of the total identified move categories are discipline-specific. Also, among the shared moves of the two disciplines, the conventionality of around one-fifth of them were found to vary with disciplines. That is, despite being a shared move appearing in both disciplines, the extent of its conventionality is potentially influenced by disciplines.

The comparison of the move structures between the two disciplines also further revealed the differences in terms of how lectures of different disciplines are structured. Different conventionality of individual move categories shared by the two disciplines implies the different preferences of the two disciplines in employing moves to structure lectures. For example, although Lee (2009) found that 'referring to previous lectures' is a conventional move employed by teachers in lecture beginnings across disciplines, this study further revealed that this move is only conventional in computer science lectures, but optional in literature lectures. This finding further showed computer science lecturers' preference of referring to contents discussed in

previous lectures to help students make connections between what is learned and what is to be learned in the beginning phase of lectures.

In the main body phase, moves associated with defining topics, interacting with students, and telling anecdotes are conventional in computer science lectures. Interestingly, it was also revealed that questions are raised more often in the main body phase in computer science lectures, but in literature lectures, questions are more frequently raised in the beginning phase. Although the current finding supports Chang's (2012) finding that audience-oriented questions are prevalent in lectures across disciplines, this study further discovered that the functions served by questions and the phases they appear in lectures may vary with disciplines.

Moreover, demonstrating process and discussing the application of topics, such as methods or tools, are rhetorical strategies specific to computer science lectures, reflecting the problem-solving nature of computer science as well as its applied orientation as a hard-applied discipline (Becher, 1994; Biglan, 1973; Clark, 2003). On the other hand, moves typical to literature lectures are associated with text interpretation and text reference, reflecting the essential elements of the reading process core to the discipline (Chambers, 2010; Chambers & Gregory, 2006).

The identification of the discipline-specific move categories as well as the varied conventionality of shared moves between disciplines confirm the present study's

proposition that there are indeed disciplinary variations regarding how lectures of different disciplines are organized rhetorically, and that disciplines are an important factor influencing move structures of lectures. This study also expands the current understanding of the potential influence of disciplines on move structures of lectures, since previous studies on move structures of lectures did not take potential disciplinary variations into account (Cheng, 2012; Lee, 2009; Samraj & Petrovic, 2015; Thompson, 1994). The fact that there are disciplinary variations in terms of move structures of lectures further suggests that there might not be a 'general' move framework of lectures that could be used to describe all the move/step categories in lectures of all disciplines. Since disciplinary variations exist among disciplinary lectures, it is thus important to identify the move frameworks or move/step categories specific to certain disciplines to further capture the different nature of different disciplines, which, in turn, could provide useful pedagogical implications to EAP teaching and learning.

Despite the importance to note the differences between literature and computer science lectures in terms of their move structures, which is one of the main purposes of the current study, it is also important to pay attention to the shared moves between the two disciplines, because they could reflect the common features of academic lectures. With 80% of the move categories shared by the two disciplines, these move

categories can be considered core components of the rhetorical move structure of lectures, which can serve as a useful reference for future studies on move structures of lectures of other disciplines.

In terms of the sequential pattern of the moves in the current study, there does not seem to be a linear sequence in terms of the occurrence of the moves and steps, as was also found in previous studies (Cheng, 2012; Lee, 2009; Thompson, 1994). In the main body phase, although generally there is still not a common sequential pattern in terms of the occurrence of moves, roughly speaking, small cyclical patterns were observed among moves 6 (*announcing the topic*), 12 (*contextualizing the topic*), and 13 (*evaluating the topic*) where topics are announced, explored, and evaluated. Reasons regarding the messiness of the sequential patterns of moves in academic lectures might be explained by the spoken nature of the lecture genre and the rather flexible and free organization of the lecture genre compared to other academic genres, such as academic research papers.

In addition to exploring the move structures of the lectures of computer science and literature, one of the aims of the present study is to investigate the role of lexical bundles in helping structure the discourse and accomplish the communicative purposes of different lecture phases. A total of twenty-two lexical bundles were identified in the beginning phase. Forty-two lexical bundles were identified in the

main body phase and three lexical bundles were found in the ending phase. As long suggested by Swales (1981) that lexical items could serve as key markers to specify different moves, the present study also found that the lexical bundles identified in different phases are associated with certain moves to help accomplish the communicative purposes of certain phases.

In particular, most of the bundles identified in the beginning phase are found to be often employed by lecturers to realize move 1 step 3 (*looking ahead*) and move 2 (*setting up lecture framework*), relating to the functions of organizing lecture structures and showing lecturers' intention. In terms of the main body phase, relatively fewer lexical bundles identified in this phase are associated with the functions of discourse organization, but with stance and referential functions. Many lexical bundles in this phase were actually found to help to realize the moves that focus topics or specify attributes regarding topics. Through combining the building blocks of texts, which are moves and lexical bundles, the rhetorical structure of the lecture genre is connected with the lexico-grammatical features that help facilitate the fulfillment of the communicative purposes of the genre. Together, they then accomplish the general purpose of the genre.

Overall, this study has extensively expanded the existing move framework of academic lectures by adding many new moves and steps, generated move structures

of literature and computer science lectures, revealed that discipline is a contributing factor that affects the move structures of academic lectures, and identified the different functions of lexical bundles associated with different lecture phases and moves. The findings of the current study not only add to the current understanding of the lecture genre, but are able to provide theoretical and pedagogical insights into different fields. The following section discusses the potential implications that the present findings can provide to different areas of study.

5.2 Implications of the study

As mentioned previously in the potential significance of the present study, the current findings have the potential to provide insights into especially genre studies, lexical studies, EAP teaching and learning, as well as teacher education. Based on the current findings, the potential implications of the current findings to different areas of study are further discussed in the following sub-sections.

5.2.1 Implications for genre studies

Relatively speaking, genre studies on academic genres have mostly concentrated on written discourse. This may be due to the difficulties of collecting data from academic spoken discourse or the labor-intensive and time-consuming process of transcribing spoken discourse into transcripts for further manual analysis. With the emergence and availability of large spoken corpora, such as Michigan Corpus of

Academic Spoken English (MICASE) and British Academic Spoken English corpus (BASE), there have been more genre studies on academic spoken genres. However, researchers still call for more studies on spoken genres (Flowerdew, 1994; Hyland, 2002).

Swales' rhetorical move analysis (1990) has been influential especially in researching the genre of academic research papers. Although some studies have applied such analysis to research academic lectures, the understanding of the genre is still very limited and many issues also exist. Addressing the gaps, this study has expanded the current understanding of the lecture genre in terms of its rhetorical move structure by proposing a move framework of academic lectures more extensive than previous frameworks to describe the rhetorical move structure of entire lectures in more details. This framework is potentially helpful to genre analysts who are interested in further analyzing rhetorical move structures in academic lectures of different disciplines.

Moreover, many more studies have started to conduct language analyses from a multimodal perspective (e.g., Crawford Camiciottoli, 2015; Liu, 2019; Liu & Chen, 2020, forthcoming). Analysts can benefit from incorporating video-recordings of discourse and the corresponding transcription which would better help them to capture how meanings are constructed with the multiplicity of different

communicative modes (Norris, 2004). Another advantage of incorporating multimodal data into move analysis is that in addition to the textual clue from the transcription, non-verbal clues (gesture, gaze, movement) provided in video-recordings would more effectively facilitate the process of analyzing move structure (Lee, 2016). The multimodal data, i.e. lecture recordings, allow the current study to more clearly identify the move structure and new moves that are comparatively noticeable in video recordings than in transcripts. This study thus further demonstrates the potential benefit of incorporating multimodal data into rhetorical move analysis.

Furthermore, academic discipline has been found to be an important factor affecting language variations in written academic genres. The current exploratory study further confirmed that academic discipline also potentially plays a role in influencing the move structure of academic lectures. This also further expands the current understanding of the variations in the lecture genre. That is, in addition to lecturing style (Brown & Bakhtar, 1988), lecture functions (Deroey & Tavernier, 2011), and question types (Chang, 2012), discipline is also one of the factors that could contribute to variations in the lecture genre. Yet, comparisons among move structures of more disciplines should be further carried out in order to see to what extent discipline could influence move structures in lectures.

The current analysis of move structures in lectures confirms that lectures are both a spoken and pedagogical genre (Thompson, 1994), which is reflected by the unpredictability of the occurrence of moves, and the presence of the three crucial elements of lecture discourse (*informing*, *evaluating*, and *organizing*). In researching the rhetorical movements in lecture introductions, Thompson (1994) suggested the following:

> It would be unwise to try to force lecture introductions into the straitjacket of a generic model which does not allow for the inherent flexibility of design and variability in sequencing to be found in a relatively informal spoken genre such as the lecture. (pp. 182-183)

The findings of the current study therefore reinforce Thompson's proposition and indicate that in lecture genre, regardless of phases, linear sequential patterns of moves are rarely seen.

Finally, the identification of moves in academic lectures also reveals similarities between the rhetorical strategies employed in academic lectures and EMI lessons (Chen, 2017). Therefore, this study further points out the shared features between academic lectures and EMI lessons. Despite the speakers' different native languages between academic lectures and EMI lessons, it is unsurprising to find some similar

features in between since both of them can be considered pedagogical process genres and share a similar goal to deliver knowledge.

5.2.2 Implications for lexical studies

The findings of the present study have also expanded the current understanding of the role of lexical bundles in structuring the lecture discourse. The exploration of the relationship between lexical bundles and lecture phases reveals that certain lexical bundles are associated with certain lecture phases. The present study further shows that there are connections between lexical bundles and the realization of certain moves. That is, through the analysis of the lexical bundles in different lecture phases, the communicative purposes of different phases can be reflected by the frequent functions that lexical bundles serve in the phases.

As some researchers have attempted to address the form-function gaps in academic research papers (Cortes, 2013; Moreno & Swales, 2018), the findings of the present study further reveals how certain lexical bundles are related to certain moves or discourse functions to realize the purposes of certain moves in academic lectures. This suggests that in addition to academic written genres, potential connections between lexical bundles and move structures can also be drawn in academic spoken genres. This further supports that both lexical bundles and moves are considered potential building blocks of discourse (Cortes, 2013).

Moreover, this study has also further expanded the role of lexical bundles. That is, lexical bundles are not only able to express the local sentence-level functions, but are also able to mark purpose-oriented text segments and help realize their communicative purposes as well. As the extended relationship between lexical bundles and moves identified in academic lectures by the current study, this study could also serve as a reference for future analysis on bundle-move connection focusing on other academic spoken genres. To explore the different extent of bundle-move connections across different genres, it is essential to explore such connections in other academic spoken genres, so the extent to which move structure and linguistic features are connected in different genres can be further elucidated.

5.2.3 Implications for EAP teaching and learning

In addition to the insights the present findings can potentially provide to studies of different areas of study, the present findings can also provide pedagogical implications to EAP teaching and learning. With the move framework identified based on the current lecture data, EAP teachers can base on the framework and introduce the potential structure of lectures to students. Text segments representing different moves or steps from authentic lectures can be provided to students for them to analyze and identify the communicative purposes that the text segments are meant to accomplish.

Reading authentic examples can also help raise students' awareness and competence of the genre (L. Flowerdew, 2001).

On the other hand, the lexical bundles in different lecture phases in the current study can also be used as supplementary materials for EAP teachers to provide information regarding the frequent lexical features associated with different phases or moves. They could also inform students of the different functions that lexical bundles commonly serve in different phases and explain the relationship between bundles functions and communicative purposes of different lecture phases. Particularly, students can be given authentic examples of lecture discourse with lexical bundles. They then can be asked to identify the functions of the lexical bundles and discuss how the functions that the lexical bundles serve is related to the purpose-oriented text segments. According to Cortes (2013), it would also be helpful to have students see the role of lexical bundles in helping structure and accomplish the communicative purpose of different moves by giving them opportunities to compare text segments of the same move with or without lexical bundles.

It has also been indicated by Henry and Roseberry (2001a) that results of genre analysis can provide materials for genre-based lessons. They further proposed four crucial steps in organizing such lessons: (1) introducing the genre, (2) reading and analyzing the moves, (3) learning the language of moves, and (4) constructing the

genre (p. 117). These could serve as procedures for EAP teachers to help students become familiar with the lecture genre.

More specially, basic information regarding the lecture genre could be provided by teachers, such as the purpose of the genre, the audience and the user of the genre, and where the genre is often seen. Then, examples of text segments of different move categories in the lecture genre can be provided to students to analyze the purposes each text segment aims to achieve. After the moves of text segments are identified, students can be asked to identify shared linguistic features that are commonly seen in the text segments sharing the same moves, such as tenses, frequent lexical items, expressions, etc. Lastly, to ensure students' understanding of the genre, they can be asked to do a writing exercise by writing a draft of lecture speech. With multiple practices, students would not only be familiar with the structure and linguistic features of the lecture genre, but also develop awareness of genre variations, which can facilitate their recognition of different genres they encounter in university context.

Moreover, the present study reveals that about 80% of the moves between lectures of literature and computer science are similar. This study thus does not promote a strict discipline-specific instruction in terms of move structure of academic lectures. However, considered that there are indeed many disciplinary variations in terms of the frequency of using certain moves between disciplines, it is still

recommended that EAP teachers should still remind students of the potential disciplinary variations in terms of move structures in academic lectures. Teachers can also draw examples from the current results to show students how disciplines with different nature employ rhetorical moves to accomplish the communicative purpose of academic lectures differently. To sum up, although it might not be necessary to carry out discipline-specific instructions on move structure of lectures, it is essential for EAP teachers to make their students aware of the potential influence of discipline on move structures.

5.2.4 Implications for teacher education

As suggested by Lee (2009), one way to help lecturers to deliver effective lectures is through "asking lecturers-in-training to focus on the linguistic and rhetorical structures that more experienced instructors (native or non-native speakers) use in realizing their communicative purposes" (p. 53). Lee's suggestion highlights the importance of rhetorical structure and linguistic features in organizing a lecture. With the help of the move framework and lexical bundles identified in the present study, novice or non-native lecturers could use them as reference materials for planning their lectures. By becoming familiar with the rhetorical and linguistic patterns of the lecture genre, such information could help non-native or novice teachers to develop the professional skills necessary to deliver effective lectures. Such

competence could also allow them to make academic lectures more accessible and meaningful to students by creating coherent lectures with clear organization for students to create mental maps for understanding.

The present study also found that there are disciplinary variations in terms of how lectures of different disciplines are rhetorically organized. It is thus important for novice lecturers to understand the different conventions that lecturers of different disciplines tend to follow when organizing lectures in order to better fit in their own academic communities.

The moves and steps identified in the current study are also found to be comparable with the strategies employed by EMI instructors (Chen, 2017). This suggests that although potential differences exist between the genres of lectures and EMI classroom lessons, they are similar to some extent considering the shared aim to deliver knowledge in academic context. The present move framework and lexical bundles may also be potentially helpful to EMI instructors to employ as reference materials for lesson planning.

5.3 Limitations and future research

This study offers an overview of the rhetorical organization and frequent linguistic features of the lecture genre that aims to further the current understanding of this important but underexplored pedagogical genre. The move framework presented in the

present study is fairly comprehensive even though it may not provide exhaustive account. Despite the many findings revealed by the present study, several limitations still need to be pointed out and further addressed in future studies.

First, although larger numbers of lectures and lecturers were analyzed in the current study compared to the previous studies, considered the labor-intensive and time-consuming process of manually analyzing move structures, the numbers of the lectures and lecturers investigated in the present study are still rather limited. Many more lectures delivered by more lecturers should be further analyzed in future studies in order to provide more extensive understanding of move structure of academic lectures. Also, the present exploratory study only investigated the move structures of the lectures of literature and computer science. Considered this study has revealed that there are disciplinary variations in terms of move structures of lectures, it should be noted that the move structures identified in the current study may not be able to represent the overall move structure of all disciplines. Future studies should explore the move structures of more and different disciplines or sub-disciplines to see to what extent discipline plays a part in affecting move structures of academic lectures, as well as to identify moves that are essential to lectures of different disciplines.

Second, the current move analysis did not record the raw frequencies of each move/step category in terms of their actual occurrences in the lectures, but only

recorded whether a certain move/step had appeared in individual lectures. Considered the primary goal of the current study was to identify the move/step categories appearing in lectures, the researcher did not consider raw frequency of move/step as a criterion of inclusion, but simply recorded all the move/step categories occurring in the current lecture data. Future studies should take the issue into consideration when determining whether raw frequency should be used as a criterion for selecting and including move categories in a move framework.

Third, although this study aimed to investigate the 4-word, 5-word, and 6-word lexical bundles appearing in the three lecture phases, very few 5-word and 6-word lexical bundles were identified in the current corpora, which might be due to the relatively limited sizes of the corpora compared to those applied in studies specifically on the use of lexical bundles. As indicated by Cortes (2013), lexical bundles longer than five words always serve as triggers initiating particular steps in different moves in research article introductions, as many of them contain lexical elements "loaded with information essential for accomplishing a particular communicative purpose" (p. 41). To further explore the role of lexical bundles as triggers of moves/steps in academic lectures, future studies should construct larger corpora in order to extract more lexical bundles with longer length, which may also better help identify triggers of moves in different phases.

Although the present study has identified lexical bundles associated with certain moves or steps, or with certain lecture phases, to more extensively investigate the form-function relationship between moves and lexical bundles, lexical bundles appearing in individual moves and steps should be further identified and analyzed in terms of how they initiate or complement a move or a step in lectures. As suggested by Cortes (2013), "[t]hose bundles that are functioning as triggers for moves and steps could be used to construct a bundle-move/step scheme that could act as a skeleton to describe particular moves and their communicative functions" (p. 41). Although Cortes' focus was on research papers, the suggestion should also be applied to academic lectures as well. This aim can be accomplished starting with annotating moves and steps in a large sample of lectures, similar to the purpose of the ENEIDA team (Spanish Team for Intercultural Studies on Academic Discourse), which has been dedicated to annotating moves and steps in a large sample of research papers (Moreno & Swales, 2018).

Lastly, although past research (e.g., Lee, 2009) has revealed the potential help of the knowledge of the rhetorical move structures on students' lecture comprehension, and there have been studies proposing move frameworks of lectures (e.g., Cheng, 2012; Lee, 2009; Samraj &Petrovic, 2015; Thompson, 1994), there is a lack of empirical evidence in terms of whether move structure of lectures can actually

improve students' comprehension. Therefore, future studies should conduct experiments to explore how the knowledge of move structure of lectures can facilitate students' lecture comprehension as well as investigate its relationship with students' comprehension of content knowledge.

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APPENDICES

Appendix A. The move structure of literature lectures

BEGINNING
M1: Warming up
S1: Making a digression
S2: Housekeeping
S3: Looking ahead
M2: Setting up lecture framework
S1: Announcing the lecture topic
S2: Indicating the scope
S3: Outlining the lecture structure
S4: Presenting the aims
M3: Putting the topic in context
S1: Showing the importance of the topic
S2: Relating “new” to “given”
S3: Referring to earlier lectures
M4: Asking probing questions Or raising issues
M5: Showing topic interest
MAIN BODY
M6: Announcing the topic
M7: Showing future course plan or lecture outline
M8: Defining the topic
M9: Describing the purpose
M10: Showing topic relevance
M11: Telling asides or anecdotes
M12: Contextualizing the topic
S1: Describing the topic
S2: Explaining the topic
S3: Interpreting the topic
S4: Highlighting important information
S5: Referring to/reading the text
M13: Evaluating the topic and arguing for a viewpoint
M14: Referring to content discussed in previous lectures
M15: Interacting with students
M16: Summarizing the main points

M17: Reminding students of upcoming assignment

ENDING

M18: Concluding the lecture

S1: Summarizing the content of the lecture

S2: Indicating the end of a lecture

M19: Cooling down

S1: Looking ahead

S2: Housekeeping

S3: Addressing non-course related matters

M20: Farewell

Appendix B. The move structure of computer science lectures

BEGINNING

M1: Warming up
- S1: Making a digression
- S2: Housekeeping
- S3: Looking ahead
- S4: Getting started / Greeting

M2: Setting up lecture framework
- S1: Announcing the lecture topic
- S2: Indicating the scope
- S3: Outlining the lecture structure
- S4: Presenting the aims

M3: Putting the topic in context
- S1: Showing the importance of the topic
- S2: Relating “new” to “given”
- S3: Referring to earlier lectures

MAIN BODY

M4: Announcing the topic

M5: Showing future course plan or lecture outline

M6: Defining the topic

M7: Describing the purpose

M8: Showing topic relevance

M9: Telling asides or anecdotes

M10: Contextualizing the topic
- S1: Describing the topic
- S2: Explaining the topic
- S3: Applying the knowledge
- S4: Demonstrating the process
- S5: Highlighting important information

M11: Evaluating the topic and arguing for a viewpoint

M12: Referring to content discussed in previous lectures

M13: Interacting with students

M14: Summarizing the main points

M15: Pep talk

M16: Reminding students of upcoming assignment

ENDING

M17: Concluding the lecture

S1: Summarizing the content of the lecture

S2: Indicating the end of a lecture

M18: Cooling down

S1: Looking ahead

S2: Housekeeping

S3: Addressing non-course related matters

M19: Farewell

Appendix C. Summary of the lectures in which individual moves and steps appeared

Moves/Steps	Lectures
BEGINNING	
M1: Warming up	
S1: Making a digression	C-Gu-01, C-W-02, L-Ha-03, L-D-03
S2: Housekeeping	C-Gu-01, C-Dv-02, L-F-02, L-Ha-03
S3: Looking ahead	C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-03, C-W-03, C-De-02, C-Dv-02, C-Dv-03, L-F-02, L-F-03, L-Ha-02, L-Hu-01, L-Hu-03
S4: Getting started / Greeting	C-Gu-02, C-Gu-03, C-De-01
M2: Setting up lecture framework	
S1: Announcing the lecture topic	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-W-03, C-De-02, C-De-03, C-Dv-01, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-F-03, L-Ha-01, L-Ha-02, L-Ha-03, L-Hu-01, L-Hu-02, L-Hu-03, L-R-01, L-R-02, L-R-03, L-D-01, L-D-02, L-D-03
S2: Indicating the scope	C-Gu-01, C-W-02, C-De-03, C-Dv-03, L-F-02, L-F-03, L-Hu-01, L-R-02, L-D-01
S3: Outlining the lecture structure	C-Gr-01, C-Gr-02, C-W-02, C-W-03, C-De-01, C-Dv-01, C-Dv-03, L-Hu-01, L-Hu-03, L-D-01, L-D-03
S4: Presenting the aims	C-Gr-01, C-W-01, C-De-01, C-De-03, C-Dv-01, C-Dv-03, L-Hu-01, L-D-01, L-D-03
M3: Putting the topic in context	
S1: Showing the importance of the topic	C-Gr-02, C-Gu-02, C-W-01, C-De-03, C-Dv-02, C-Dv-03, L-F-02, L-F-03, L-Hu-01, L-R-02, L-D-03
S2: Relating “new” to “given”	C-Gu-02, C-W-01, C-W-03, C-De-02, C-Dv-01, C-Dv-02, L-Ha-01, L-Ha-02, L-Ha-03, L-Hu-01, L-Hu-02, L-R-01, L-R-03, L-D-01, L-D-03
S3: Referring to earlier lectures	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-De-01, C-De-02, C-De-03, C-Dv-01, C-Dv-03, L-F-01, L-F-02, L-Ha-02, L-Hu-01, L-R-03, L-D-01, L-D-03

M4: Asking probing question or raising issues for discussion	L-Hu-01, L-Hu-03, L-R-02, L-D-01, L-D-03
M5: Showing topic interest	L-R-02, L-D-01, L-D-03
MAIN BODY	
M6: Announcing the topic	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-W-03, C-De-01, C-De-02, C-De-03, C-Dv-01, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-F-03, L-Ha-01, L-Ha-02, L-Ha-03, L-Hu-01, L-Hu-02, L-Hu-03, L-R-01, L-R-02, L-R-03, L-D-01, L-D-02, L-D-03
M7: Showing future course plan or lecture outline	C-Gr-01, C-Gu-01, C-Gu-02, C-Gu-03, C-W-03, C-De-01, C-Dv-01, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-F-03, L-Ha-01, L-Ha-03, L-Hu-03, L-R-02, L-R-03, L-D-01, L-D-02, L-D-03
M8: Defining the topic	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-W-03, C-De-01, C-De-02, C-De-03, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-F-03, L-Ha-02, L-R-01, L-R-03
M9: Describing the purpose	C-Gr-03, C-De-01, C-De-02, C-Dv-01, C-Dv-02, C-Dv-03, L-Hu-01, L-Hu-02, L-Hu-03
M10: Showing topic relevance	C-Gu-01, C-Gu-02, C-De-02, C-De-03, C-Dv-02, L-F-02, L-F-03, L-Ha-01, L-Ha-02, L-Ha-03, L-Hu-02, L-Hu-03, L-R-01, L-R-03, L-D-03
M11: Telling asides or anecdotes	C-Gr-01, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-De-01, C-De-02, C-De-03, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-F-03, L-Ha-01, L-Hu-03, L-R-03, L-D-01, L-D-02, L-D-03
M12: Contextualizing the topic	
S1: Describing the topic	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-W-03, C-De-01, C-De-02, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-F-03, L-Ha-01, L-Ha-02,

	L-Ha-03, L-Hu-01, L-Hu-02, L-Hu-03, L-R-01, L-R-02, L-R-03, L-D-01, L-D-02, L-D-03
S2: Explaining the topic	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-W-03, C-De-01, C-De-02, C-De-03, C-Dv-01, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-F-03, L-Ha-01, L-Ha-02, L-Ha-03, L-Hu-01, L-Hu-02, L-Hu-03, L-R-01, L-R-02, L-R-03, L-D-01, L-D-02, L-D-03
S3: Interpreting the topic	L-F-01, L-F-02, L-F-03, L-Ha-01, L-Ha-02, L-Ha-03, L-Hu-01, L-Hu-02, L-Hu-03, L-R-01, L-R-02, L-R-03, L-D-01, L-D-02, L-D-03
S4: Applying the knowledge	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-03, C-W-02, C-W-03, C-De-01, C-De-02, C-De-03, C-Dv-01, C-Dv-02, C-Dv-03
S5: Demonstrating the process	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-W-03, C-De-01, C-De-02, C-De-03, C-Dv-01, C-Dv-02, C-Dv-03
S6: Highlighting important information	C-Gr-01, C-Gr-03, C-Gu-01, C-Gu-02, C-W-01, C-W-03, C-De-03, C-Dv-01, C-Dv-02, L-F-01, L-F-03, L-Ha-01, L-Hu-01, L-R-02, L-R-03, L-D-01
S7: Referring to/reading the text	L-F-01, L-F-03, L-Ha-01, L-Ha-02, L-Ha-03, L-Hu-01, L-Hu-02, L-Hu-03, L-R-01, L-R-02, L-R-03, L-D-01, L-D-02, L-D-03
M13: Evaluating the topic and arguing for a viewpoint	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-W-03, C-De-01, C-De-02, C-De-03, C-Dv-01, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-F-03, L-Ha-01, L-Ha-02, L-Ha-03, L-Hu-01, L-Hu-02, L-Hu-03, L-R-01, L-R-02, L-R-03, L-D-01, L-D-02, L-D-03
M14: Referring to content discussed in previous lectures	C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-De-01, C-De-02, C-De-03, C-Dv-01, L-F-01, L-F-02, L-Ha-01, L-Hu-02, L-Hu-03,

	L-R-01, L-R-03, L-D-01, L-D-03
M15: Interacting with students	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-De-01, C-De-02, C-De-03, C-Dv-01, C-Dv-02, C-Dv-03, L-Ha-01, L-Hu-01, L-R-02, L-R-03, L-D-01, L-D-03
M16: Summarizing the main points	C-Gr-03, C-Gu-01, C-Gu-02, C-W-01, C-De-01, C-De-02, C-De-03, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-Ha-01, L-R-01, L-R-02, L-D-02, L-D-03
M17: Pep talk	C-De-02, C-De-03, C-Dv-01
M18: Reminding students of course-related information	C-De-01, C-De-02, L-F-01, L-F-03, L-D-01, L-D-02
ENDING	
M19: Concluding the lecture	
S1: Summarizing the content of the lecture	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-W-01, C-W-02, C-Dv-01, L-F-01, L-Hu-02, L-R-02, L-R-03, L-D-01, L-D-02
S2: Indicating the end of a lecture	C-W-03, C-De-02, C-De-03, C-Dv-02, L-Hu-03, L-R-03
M20: Cooling down	
S1: Looking ahead	C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-03, C-De-01, C-De-02, C-Dv-01, C-Dv-02, C-Dv-03, L-F-02, L-F-03, L-Ha-01, L-Ha-02, L-Ha-03, L-Hu-01, L-Hu-02, L-Hu-03, L-R-01, L-R-02, L-R-03, L-D-01, L-D-02
S2: Housekeeping	C-W-03, C-De-01, L-Ha-01, L-Hu-01, L-R-02
S3: Addressing non-course related matters	C-W-01, L-Ha-01
M21: Farewell	C-Gr-01, C-Gr-02, C-Gr-03, C-Gu-01, C-Gu-02, C-Gu-03, C-W-01, C-W-02, C-W-03, C-De-01, C-De-02, C-De-03, C-Dv-01, C-Dv-02, C-Dv-03, L-F-01, L-F-02, L-F-03, L-Ha-01