



Use of Core Modal Verbs in Academic Writing of Thai EFL Students

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Abstract

Modal verbs, as one of modality devices, play an important role in academic writing and argument. To gain insights into Thai EFL students' use of modal verbs in academic writing, this study carried out an in-depth analysis of 15 discussion essays written by third-year English majors at one public university in Thailand. It focused specifically on the nine core modal verbs (can, could, may, might, will, would, shall, should and must) and examined their frequencies and semantic functions. The data were analyzed employing Sketch Engine, a corpus concordancer and drawing on categories of semantic functions. The analysis revealed that can, will, may and should were the top four frequently favored items, respectively while must, could, would and might were found to be exceptionally underused. As for semantic functions, the most dominant meaning was "possibility" expressed by can. The results indicate that Thai students' academic writing skills need to be significantly improved, particularly their ability to use modal verbs strategically in their essays. The curriculum design for academic writing needs to emphasize both syntactic structure and semantic functions of modal verbs and encompass activities urging students to practice using these modals systematically and purposefully.

1. Introduction

Academic writing skills are vitally important for university students because they need to perform various writing tasks, such as assignments, exam, research reports or theses. In order to produce successful academic written texts, students need to be able to utilize relevant linguistic resources, one of which is modal auxiliary verbs (modal verbs for short). Their significance is that they are linguistic devices commonly employed to convey modality in English academic discourse (Yang, 2018). According to Halliday (1985, p. 6), modality is "the intermediate choices between yes or no". Quirk, Greenbaum, Leech, and Svartvik (1985, p. 219) adds that modality is "the manner in which the meaning of a clause is qualified so as to reflect the speaker's judgment of the likelihood of the proposition of the sentence being true".

Like other argumentative writing, discussion is not simply about presenting an argument. Rather, it aims to convince the reader of the value of the proposed issue (Knapp & Watkins, 1994). Because of this, the writer's competent use of modality is highly valued. Knapp and Callaghan (1989, p. 42) stress that ...

Modality expresses the writer's judgment on the truth value or credibility of the 'facts' contained in the clause. It is encoded in language through a series of choices speakers or writer make in relation to the distance they place themselves from the 'truth' or 'credibility' of what is going on in the clause.

Modality can be expressed through a variety of devices (Carter & McCarthy, 2006, p. 83; Quirk et al., 1985). For example, through lexical devices the writers may use nouns (e.g. intention, determination and expectation), adjectives (e.g. certain, doubtful, likely and sure), adverbs (e.g. hardly, perhaps, possibly and evidently), and verbs (e.g. doubt, believe, think, predict, and suggest) to express modality. Yet, the most commonly used device to express modality, according to Hardjantao (2016) and Yang (2018), is the nine core modal verbs (can, could, may, might, will, would, shall, should and must) which will be the focus of this study.

Yet, modal verbs are quite problematic to non-native students. Holmes (1998, pp. 21-22) argues that "they are notoriously difficult for first or second language learners, let alone foreign language learners". Previous studies in both EFL and ESL contexts (e.g. Btoosh, 2019; Torabiardakani, Khojasteh, & Shokrpour, 2015; Yang, 2018) have revealed that non-native students experienced difficulties employing modal verbs in their texts. In particular, they were confused with their semantic functions because the same modal verbs sometimes convey different functions. For example, the modal "can" encompasses three different functions: "permission", "possibility" or "ability". It is very challenging for the students to decide which modals should be employed as modality devices in their sentences. Inappropriate choices of modal verbs would affect the presentation of information at the syntactic and semantic levels. In contrast, effective use of modality can greatly enhance pragmatic aspects in academic writing (Hyland, 1994; Myers, 1989) and may indicate an advanced level of both linguistic and pragmatic competence (Chen, 2010).

In attempt to improve Thai students' academic writing skills, a growing number of studies have been carried out in a wide variety of areas. Some examined L2 writing errors, writing assessment, genre-based writing instruction, approaches to teaching writing, and written discourse analysis (Chuenchaichon, 2014). Nevertheless, research into Thai students' use of modals in academic writing is still scarce. To address this research gap, this present study aims to examine Thai EFL students' use of the nine core modals: can, could, may, might, will, would, shall, should and must (Carter & McCarthy, 2006, p. 420, p. 922). The corpus is 15 discussion essays produced by 15 third-year English majors at one public university in Thailand. The analysis aims to find out (i) the frequency of use of nine core modal verbs and (ii) the semantic functions depicted by these modal verbs. The results would reveal the extent to which the students can employ modal verbs in their essays to shape their arguments. The results would also inform academic writing instruction about the epistemic nature of modal verbs typical of academic argument.

2. Literature Review

To adequately understand the students' use of modal verbs, it is beneficial to review semantic functions of modal verbs and explore previous studies concerning the use of modal verbs in academic written texts in EFL contexts.

Semantic Functions of Modal Verbs

Modal verbs are hard to pin down. This semantic complexity is partly due to the fact that because one modal may have several meanings and sometimes one meaning can be related to a number of modal forms (Khojasteh, 2011, p. 12). Biber et al. (1999, cited in Khojasteh, 2011, p. 22) propose that the semantic functions of the nine core modals can be divided into three main categories based on their major meanings:

1. "permission/ possibility/ ability": can, could, may, might
2. "obligation/ necessity": must, should
3. "volition/ prediction": will, would, shall

The semantic functions of these modals with further details are illustrated in Table 1 below.

Table 1. Description of modal semantic class (Biber et al., 1999, as cited in Torabiardakani et al., 2015, pp. 52-53).

Modal Auxiliary	Meaning	Definition	Example
can	1. permission	evidence of some condition that determines whether an agent is or is not permitted to do something	<i>Can I have an apple please?</i> <i>You can read my book.</i>
	2. possibility	express the degree to which something is possible: inanimate noun/dummy it + can + linking verb + adjective/ noun phrase; or inanimate noun + can + main verb	A brief view of the century as a whole <i>can</i> be useful.
	3. ability	evidence of an animate agent that is capable of doing something	I <i>can</i> hear what she's saying to somebody.
could	1. permission	used in its past tense to refer to permission	And we didn't know we <i>could</i> see her.
	2. possibility	express the degree to which something was possible	That <i>could</i> be her. It <i>could</i> be anything you choose.
	3. ability	evidence of an animate agent that was capable of doing something in the past	I <i>could</i> have danced all night. I <i>could</i> feel the pain in my hand.
must	1. obligation	express an agent's responsibility to do something	We <i>must</i> be careful to avoid several logical pitfalls. We <i>must</i> get up early.
	2. necessity	logically concludes something is likely/ necessary based on evidence available to the speaker/ writer	It <i>must</i> have something to do with the government. She <i>must</i> have left already.
should	1. obligation	the agent is obliged to do something.	You <i>should</i> relax.
	2. necessity	logical concludes something is likely/necessary based on evidence available	That <i>should</i> have been Sydney.

may	1. possibility	expressing agent's doubt in the truth of proposition (Coates, 1983) or slight possibility	It <i>may</i> rain tomorrow.
	2. permission	refers to present or future time when used to ask for permission or to make a polite request and giving permission to the agent	You <i>may</i> do your language work if you want to.
might	1. possibility	expressing agent's doubt in the truth of proposition	It <i>might</i> rain tomorrow.
	2. permission	refers to present or future time when used that the agent was permitted to do something	She said I <i>might</i> go.
shall	1. prediction	make predictions that are not completely certain or definite	We <i>shall</i> be away on holiday from Wednesday 29 August.
	2. volition	express intention	I <i>shall</i> help you.
will	1. prediction	make predictions that are not completely certain or definite	Gas prices <i>will</i> drop soon.
	2. volition	express immediate decisions or intention	"And then I'll take you home to get it."
would	1. prediction	is used for future time references when there is a sense of possibility or capability. It is generally regarded as a weaker alternative to will when used in this sense.	The president is proposing a new bill that <i>would</i> significantly change Social Security.
	2. volition	express immediate decisions or intention	I <i>would</i> just read the book as well.

As can be seen in Table 1, the semantic functions of modal auxiliary verbs are extremely complex for ESL and EFL students because the same modals sometimes are used to express different functions. For example, the modal verbs "can" and "could" can be used to express all of the following meanings: "permission", "possibility", and "ability". In the case of "must" and "should", they can express either "obligation" or "necessity". Given this semantic complexity, modal auxiliary verbs tend to pose challenges for both ESL and EFL students. This is because they feel uncertain about which modals to use to express modality in their sentences and this could lead to the inaccurate use of modals at both syntactic and semantic levels (Torabiardakani et al., 2015).

3. Previous Studies on the Use of Modal Verbs in Academic Written Texts in EFL Contexts

A considerable number of research studies have been carried out to gain insights into the use of modal verbs in academic written discourse by EFL students, or native and non-native writers of English. Demir (2018) investigated 200 scientific articles written in English on English Language Teaching (ELT) of native (i.e. Anglophonic) and non-native of English (i.e. Turkish) writers to find out how and to what extent each used hedges in their research articles written in English. The investigated hedging devices included epistemic modals, verbal hedges, adjectival hedges, adverbial hedges, and quantifiers/determiners. The results revealed that there was a statistically noticeable difference in the categories *modal*, *verb*, *adverb*, *determiner/quantifier*, and *noun*, but not the category of *adjective*. Further, the most frequently used subcategory of hedging devices of native writers was *verbs*. However, for non-native

(Turkish) writers it was *modals* and the five most frequently used were *can*, *may*, *might*, *could* and *should* respectively. The results also revealed that non-native writers were more likely to use *can* instead of *may* contrasting with native writers preferring *may* to *can*. Further, non-native writers did not use *would* as an indirectness device as native writers did.

Yang (2018) compared the two corpora including the learner corpus (LC) and the professional corpus (PC). The former were academic writings by 2nd year Chinese university students and the latter were published articles written by professional researchers all over the world. The study aimed to find out the frequency of the use of nine core modal verbs *can*, *could*, *may*, *might*, *shall*, *should*, *will*, *would*, and *must*. The results revealed that the students tended to use modal verbs more frequently than the professionals. Further, it appeared that they overused *can*, *will*, *could*, and *would*, and underused *may*. Yang's study results (2018) are conclusive with previous studies (e.g. Ma & Lu, 2007; Liang, 2008) that Chinese students tended to overuse modal verbs in their written texts. The explanation may be that they transfer the use of modal verbs which are more commonly used in conversations to academic written texts (Biber et al., 1999; Wen, Ding, & Wang, 2003). Hyland and Milton (1997, as cited in Yang, 2018) assert that some student writers have difficulty differentiating between informal spoken and academic written forms.

Btoosh (2019) investigated how Arab students of English used the modals in academic writing. One hundred academic essays written by Arabic speaking Jordanian university students were compared to the same size of essays written by American and British university students. The results revealed that Arab students used more modal verbs in their writing than the native writers. The five most frequently used modals were *can*, *will*, *would*, *should* and *must* respectively. Further, Arab students' essays showed the overuse of *must*, *can*, and *should* and the underuse of the epistemic modals *may*, *might*, *would*, and *could*. This is attributed to both Arab students' general tendency and their certainty-oriented cultural background. To quote Ajami (2016, p. 121), ...

The Arab-Islamic culture is also certainty-oriented in the sense that most Arabs and Muslims consider their beliefs to be certainties, i.e. their beliefs could not be subjected to critique, doubt, and replacement. This essential aspect of the Arab-Islamic culture is related to Arabic language itself.

Btoosh's study (2019) supports Hyland's view (1998) that the language the writer uses is in line with his/her community's expectations or 'norms'.

Unlike previous studies, Torabiardakani et al.'s (2015) study explored semantic functions of the nine modals. The data were 136 compositions written by adult Iranian EFL learners of English. The analysis was carried out using the Wordsmith Tool. Results showed that the students tended to use "ability" meaning of the modals *can* and *could*, but underused their "possibility" meaning. As for the modals *may* and *might*, their "possibility" meaning was favored ahead of the "permission" meaning. In the case of the modal *should*, the "obligation/advice" meaning was more frequently used than "necessity" meaning. Regarding the modal *must*, its "obligation" meaning is more dominant than its "necessity" meaning. In terms of the modals *will* and *would*, its "volition" meaning dominates its "prediction" meaning. Lastly, the modal *shall* was not used even once by the students. The study results emphasize the need to continuously expose the students to the modal verbs and their semantic functions throughout different levels to enable them to fully understand their various meanings and apply them in their written texts communicatively and effectively.

4. Research Methodology

The corpus of this study were 15 discussion essays written by 15 third year English and Communication (EC) majors who enrolled in a compulsory course called Academic Writing

offered in one public university in Thailand. As a part of course requirements, the students were assigned to write a discussion genre essay on the topic “Should marijuana be legalized in Thailand?” The length was set as 250-300 words.

The data analysis involved two stages. Firstly, the identification of the nine core modals: *can, could, may, might, will, would, shall, should* and *must* (Carter & McCarthy 2006, p. 420, p. 922) was performed with the assistance of Sketch Engine, a corpus concordancer. This software was employed because it enabled the researcher to identify the target linguistic features and observe their co-textual contexts. It should be noted, however, that the modal verbs featured in the direct quotations were excluded as they do not truly reflect the student writer’s expression of attitude or position on the issue.

Secondly, the semantic functions of all nine modal verbs were examined and then categorized into three groups. As mentioned in 2.2, the semantic functions of the nine modal verbs can be categorized into three groups, namely (i) the ability/possibility/permission modals, (ii) the obligation/necessary modals, and (iii) the volition/prediction modals (Torabiardakani et al., 2015). The modal verbs in each group (embracing both their positive and negative forms) are displayed in Table 2 below.

Table 2. Positive and negative forms of modal verbs

	Group	Modal	
1	The ability/ possibility/ permission	can could may might	cannot could not may not might not
2	the obligation/ necessary	must should	must not should not
3	the volition/ prediction	will would	will not would not

To ensure the reliability of the study, the interpretation results were reviewed by two other lecturers of English; one is native Thai and the other native English. Both have been teaching at the university level for over 10 years.

5. Results and Discussion

The results encompass the frequencies of the nine core modal verbs and the semantic functions of each modal. The implications for future teaching are provided.

Frequency Counts of Individual Modal Verbs

According to the results, the frequencies of the nine core modal verbs investigated are as follows.

Table 3. The frequency counts of individual modal verbs

Modal	Frequency	Percentage	Rank
can (cannot, can not, can't)	136	58.11	1
could (could not, couldn't)	6	2.56	7
may (may not)	20	8.54	3
might (might not)	8	3.41	5
will (will not, won't)	33	14.10	2

would (would not, wouldn't)	8	3.41	5
must (must not, mustn't)	5	2.13	8
should (should not, shouldn't)	18	7.69	4
shall (shall not, shan't)	0	0	9
Total	234	100	

As shown in Table 3, *can* is the most frequently used in the students' essays. Following are *will*, *may* and *should* respectively. Compared to the total number of *can*, the modals *must*, *could*, *would* and *might* appear to be exceptionally underused. The results of this present study coincide with some previous studies (e.g. Biber et al., 1999; Btoosh, 2019; Demir, 2018; Hyland & Milton, 1997; Yang, 2018) which found that the overuse of *can* is the general tendency of L2 learners because "it expresses different, ambiguous and pragmatic meaning, including ability and possibility" (Btoosh, 2019, p. 106). Moreover, in classroom teaching in Thailand *can* is often used interchangeably with *may* and in a variety of registers and topics. These may help explain the overuse of *can* (58.11%) and the much less use of *may* (8.54%).

In their studies, Btoosh (2019) and Yang (2018) investigated the use of modal verbs in academic papers of Iranian and Chinese students respectively and found that apart from *can*, the two most frequent modals in the corpora were *will* and *should*. The corpus of this present study also revealed that *will* and *should* were among the top four most frequent modals. In fact, the modal *will* accounted for 14.10% of the total tokens and the modal *should* for 7.69% respectively. In her study, Yang (2018) also discovered that her Chinese students consistently underused *may*. Similarly, in this present study the modal *may* accounted for only 8.54% of all the tokens despite being the third most frequent modal. Overall, the top four modal verbs (*can*, *will*, *may*, and *should*) occupy the majority of all modal verbs used by the students, accounting for 88.44%.

For the other four modal verbs including *would*, *could*, *must* and *might*, they appeared to be extremely underused accounting for 11.51 % of the modal tokens. This is probably due to the instructional effects and materials used in the classroom presenting the modals *would* and *could* as past forms of *will* and *can* with their modality functions being relatively overlooked. The students, thus, used a great number of *can* and a number of *will* to convey their attitude toward the points being discussed. As for *might*, some scholars (e.g. Coates, 1983; Collins, 2009) claim that it can be used interchangeably with *may* as both have the same degree of tentativeness. Furthermore, Coates (1983) observes that in present day English *might* is seldom used as a past-time equivalent of *may*. Thus, it is possible that the students are more accustomed to using *may* than *might*. Consequently, *might* was barely used in the students' essays.

Compared to *should*, *must* was much less frequently used. While *should* is principally used to express "a mild obligation or duty", *must* is associated with "absolute obligation" (Btoosh, 2019, p. 106). The noticeably infrequent use of *must* in the students' essays suggests that they prefer to talk about possibility and expectation of the propositions rather than making directive and authoritative assertions. This is probably due to their inadequate understanding of academic contents. As a result, they hesitate to make categorical assertions and express their clear authority. In addition, this can probably be linked to the Thai "collectivistic" cultural background where group harmony and morality are highly valued. Consequently, possibility is favored over certainty.

In the case of the modal *shall*, it was not used even once by the participating students. On the one hand, the study results contrast with the previous study by Yamamoto (1999) which found that ESL students, particularly Japanese used *shall* frequently in their writing. The author explained that this was probably because of how they learned grammar in Japan. The modal *shall* appeared frequently in stories or exercises in grammar textbooks which explained that

shall can be used to express the future just like the modal *will*. On the other hand, this study's results confirm Leech's (2004) study that *shall* has become very infrequent in recent years.

In sum, despite the fact that the choice of modal verbs varies according to topics and culture (Hinkel, 2002), the results of this present study share some similarities with previous studies conducted in other ESL/EFL contexts. While *can* is the most frequent modal in the students' texts, *could*, *would*, *must* and *might* are markedly underused (Btoosh, 2019; Yang, 2018). The results substantiate the claim that modal verbs are particularly challenging for first and second language learners, let alone foreign language learners, to master (Hardjanto, 2016, p. 47). Thus, they "should be one of the focal points of any course to improve academic writing skills of nonnative speakers" (Ventola, 1990, p.176).

Semantic Functions of the Nine Modal Verbs

The semantic functions of the nine modals can be categorized into three groups: (i) the ability/ possibility/ permission modals, (ii) the obligation/ necessary modals, and (iii) the volition/ prediction modals (Torabiardakani et al., 2015). The modal verbs in each group (embracing both their positive and negative forms) are displayed in Table 4 below.

Table 4. The categories of the semantic functions of the modal verbs

	Group	Modal	
1	The ability/ possibility/ permission	can could may might	cannot could not may not might not
2	the obligation/ necessary	must should	must not should not
3	the volition/ prediction	will would	will not would not

The extent to which each modal group was used in the students' essays will be discussed below.

Ability/ Possibility/ Permission Modals

The "ability", as defined by Collins (2009), refers to the agent's potential to carry out actions. "Possibility" is the speaker's unawareness of the extent to which the proposition is real (Collins, 2009) and "it often sounds like deductions or conclusions made by the speaker" (Wu, 2008, as cited in Torabiardakani et al., 2015, p. 56). Lastly, "permission" is known as "the socially-based power that binds the subject to do the action expressed in the proposition" (Wu, 2008, p. 161, as cited in Torabiardakani et al., 2015, p. 56).

Table 5. Semantic distribution of the "ability/ possibility/ permission" modals

	Meaning	Modal/ Frequency								
		Can	Can not	Could	Could not	May	May not	Might	Might not	
1	"ability"	2	0	2	0	0	0	0	0	
2	"possibility"	127	6	4	0	20	0	8	0	
3	"permission"	1	0	0	0	0	0	0	0	
Total		136		6		20		8		

As shown in Table 5, for the use of modal verb *can*, the tendency of “possibility” is regarded as primary. *Can* with 136 tokens is dominantly used as “possibility” (93.38%) while “ability” and “permission” meanings account for only 1.47% and 0.73% of *can* tokens respectively. Compared to *can*, *could* is sparingly used and has been used only for conveying “possibility” (66.66%) and “ability” (33.33%) meanings.

Examples (1) to (7) are sample sentences of “possibility” meanings of *can* and *could* in the students’ corpus.

1. It is generally acknowledged that smoking marijuana regularly *can* cause serious effects on a user’s lungs.
2. Many people believe that marijuana *can* treat diseases.
3. Another advantage is that cannabis *can* regulate and prevent diabetes.
4. The CBD chemicals *cannot* stop cancer cells immediately....
5. Although some people receive some benefits from cannabis, it *cannot* be used to treat every disease especially cancers.
6. When marijuana is legalized in Thailand, it *could* result in a new industry and *could* increase income and tax revenue for the government.
7. Data from the Cowen & Co market research company predicts that by 2030 marijuana drinks *could* reach \$75 billion (Spotlight Companies, 2018).

In the case of the “ability” meaning of the modals *can* and *could*, there are two instances of each modal for this meaning. The sample sentences below [8 - 11] exemplify this.

8. Furthermore, the companies have to pay taxes to the government, which *can* bring money to improve the economy, the state, and the country as a whole.
9. People who begin to use marijuana for the first time *cannot* determine the amount of THC they are consuming.
10. The study by Sir William Brooke O’Shaughnessy, an Irish doctor studying in India, found that cannabis extracts *could* help lessen stomach pain and vomiting in people suffering from cholera (Ritchie, 2018).
11. In the study, Loria (2018) discovered that cannabidiol and other ingredients in cannabis *could* prevent seizures ...

For the “permission” meaning, there is only one instance of *can* for this meaning, and not even one instance for the modal *could*.

12. The condition is that the buyer must be more than 21 years old and *can* purchase not more than 28.5 grams (of marijuana).

May and *might* were both exclusively used for their “possibility” meaning. The sample sentences [13 – 15] illustrate this.

13. On the other hand, marijuana *may* lead to the negative perception and the short attention span of teenagers.
14. However, if marijuana is legal, it *might* have a positive impact on the economy.
15. For example, when users overuse marijuana or cannabis ..., the users *might not* control themselves while driving and cause a car accident.

Obligation/ Necessity Modals

Table 6. Semantic distribution of the “obligation/ necessity” modals

Meaning	Modal/ Frequency			
	Should	Should not	Must	Must not
1 “Obligation”	11	2	3	0
2 “Necessity”	5	0	2	0
Total	18		5	

As Table 6 shows, *should* was more frequently used than *must*. Of all 18 tokens of *should*, 13 of them, which account for 72.22%, were analyzed as “obligation”. The rest (27.77%) stand for the “necessity” meaning. In the case of the modal *must*, its “obligation” meaning was used more than its “necessity” meaning (60% and 40% respectively). The following are sample sentences of the “obligation” meaning of *should* and *must* respectively.

16. People who want to use marijuana *should* be in the care of a specialist ...
17. We *should* use marijuana in medical rather than recreational substances.
18. The government *must* severely punish people who use marijuana in the wrong way.
19. ... but the government *must* set the cannabis law seriously.

The sample sentences of “necessity” meaning of the modals *should* and *must* are as follows.

20. I argue that marijuana has more benefits and *should* be legalized in Thailand.
21. However, cannabis is useful in the treatment of diseases and it *should* be legalized.
22. The condition is that buyer *must* be more than 21 years old ...
23. However, the use of marijuana *must* be under strict medical control ...

The underuse of the modal *must* in the students’ essays may be partly due to the fact that in modern English the modal *must* is not widely used for its “obligation” meaning probably because of its forceful nature (Biber et al., 1999; Leech et al., 2009, as cited in Torabiardakani et al., 2015, p. 58). It is also possible that, like other ESL/EFL students who are novice writers in academic writing the students hesitate to “express even weak convictions concerning the truth of their proposition” (Hyland, 1998, p. 109). There is no doubt that they prefer *should* to *must*.

Volition/ Prediction Modals

Table 7. Semantic distribution of the “volition/ prediction” modals

	Meaning	Modal/ Frequency					
		Will	Will not	Would	Would not	Shall	Shall not
1	“Prediction”	31	0	8	0	0	0
2	“Volition”	2	0	0	0	0	0
Total	33		8		0		

As it can be seen in Table 7, out of 33 tokens of *will*, 31 of them (93.93%) stand for the “prediction” meaning and only 2 of them which accounts for 6.06 % belong to the “volition” meaning of *will*. For the modal *would*, it was exclusively used for its “prediction” meaning. Finally, *shall* was neither used for its “prediction” nor its “volition” meanings. The sample sentences of the “prediction” meaning of *will* and *would* are as follows.

24. Depression will increase from using cannabis.
25. On the other hand, using too much marijuana will affect the brain.
26. So people would need to think carefully how much they should use marijuana.
27. People would think marijuana is an addictive substance, but I do not agree with that.

For the “volition” meaning of the modal *will*, only two tokens were found in two different essays. Interestingly, both tokens appeared in the first paragraph of the students’ essays where the writers provide background information to the topic, state their position on the issue, and give a preview of what to be discussed in the following paragraphs. The following sample sentences illustrate this.

28. The discussion below will show about the advantages and disadvantages of cannabis ...
29. This essay will discuss the advantages and disadvantages of marijuana.

It is clear that the modal *will* is used to indicate the writer’s intention to discuss both pros and cons of marijuana or cannabis in the following paragraphs.

Based on the results of this study, the students’ use of modal verbs is considered problematic. They tend to overuse the modal *can*, but underuse the others, namely *may*, *would*, *could*, *must* and *might*. The predominant meaning of the modal verbs is possibility, particularly from the modal verb *can*. Other meanings like obligation, necessity, ability, permission and volition randomly occur. These results agree with those of previous studies (e.g. Btoosh, 2019; Hyland, 1995; Hyland, 1996; Yang, 2018) that non-native writers have difficulties expressing commitment and detachment to their propositions. One of the major reasons is their inadequate linguistic knowledge. Although some students are knowledgeable of grammar and lexis, they do not have an extensive knowledge of modal verbs, particularly their evaluative functions. As the use of modal verbs is extremely important in academic writing (Duman, 2016; Hardjanto, 2016; Yang, 2018), it is essential to raise students’ awareness of how their choices of modal verbs contribute to certain rhetorical functions. Otherwise, they might encounter some difficulties when they engage in discourse with the academic community. In some situations, they would need to be assertive to justify their position on the issue or to show their commitment to the reliability of the topic or issue they are reporting or discussing. In other situations, they may need to be cautious and to acknowledge the degrees of uncertainty of their statements, or claims, rather than suggesting that something is an absolute truth or fact. Hyland (1996, p. 433) argues that in academic writing “it is essential to present unproven propositions with caution and precision.”

To exemplify the students’ problematic use of the modal verbs, the following two sample sentences are discussed. As already mentioned in 6.2.1, the students extensively used the modal *can* in their essays, mainly to express the possibility of the propositions. Despite the strikingly high number of *can*, there are still some sentences where *can* should have been included. Yet, it was left out.

30. Although many countries have legalized marijuana, the United Nations (UN) noted that legalized marijuana can harm human health like other illegal drugs.

In the above sentence, it is more appropriate to use the modal *can* to express the possibility of the proposition because, taking the context of the situation into consideration, it is impossible for the writer to be certain that “legalized marijuana *harm* human health like other illegal drugs” because the *proven* fact is not yet available.

31. In the study, Loria (2018) discovered that cannabidiol and other ingredients in cannabis could prevent seizures that would happen all the time to patients.

Unlike sentence [30], it is inappropriate to use the modal *would* in sentence [31] because it should be expressed as a fact that seizures happen all the time to the patients. Another reason for the students' problematic use of the modal verbs is their insufficient knowledge of the academic contents. The given topic for the essay was "*Should cannabis be legalized in Thailand?*" To be able to produce an effective and persuasive essay, they were required to search and read various academic texts, some of which were furnished to them. During the writing processes, they were expected to utilize their macro skills like critical reading, paraphrasing, summarizing and synthesizing so that they could understand the contents and select relevant information to build up their arguments and support their claims. Yet, it is widely acknowledged that these skills are extremely difficult to master, particularly for those whose English proficiency is relatively low. Accordingly, they tend to avoid making categorical assertions or explicitly express authoritative voice in their essay. It appears that since they are student writers, it is safer for them to be tentative than assertive. Consequently, the modal verbs with possibility meaning were much more commonly used than those with certainty meaning. The following excerpts illustrate the student's repetitive use of the modals *can* and *may* respectively.

Cannabis can also affect the users' heart rate. Kaplan (2018) acknowledges that when cannabis is used, it can rapidly increase the heart rate within 3 hours. So, it can lead users to suffer a heart attack.

Another disadvantage of marijuana legalization is that it may increase violence and crime. If legal measures for preventing narcotics are not high-priority, some people may use marijuana as an addictive substance and it may be used to smuggled for sale as drugs rather than to make medicines which leads to the drug problems (Department of Mental Health, 2016). It may cause a chain of other crime like robbery, murder, and aggravated assault. These problems are all directly caused by uses of marijuana in the wrong way.

Lastly, the students' problematic use of the modal verbs may be due to insufficient practice in the classroom. In the Academic Writing classroom, they were taught to hedge their statements and claims using the modal verbs. They were also provided with opportunities to analyze several sample discussion texts featuring the use of various modal verbs such as *can*, *will*, *may* and *must*. However, there might not have been enough emphasis on the semantic functions of these modal verbs. Accordingly, the students tend to rely heavily on the ones which they are most familiar with, especially *can*, *may* and *should*. To effectively engage in the academic context and be professional in writing, it is essential to equip the students with the ability to skillfully use the modal verbs so that they can successfully apply them to their academic writing.

The following excerpt displays the student's alternate use of the modals *can*, *may* and *might*, all of which express the possibility meaning.

The benefits of marijuana apart from reducing pain, inflammation or curing a user's depression is that marijuana can be used to reduce the symptoms of diseases... Some animal studies also suggest certain cannabinoids may slow growth and reduce the spread of some forms of cancer (American Cancer Society, 2015). It indicates that the substances in marijuana can relieve the incidence of cancer which is useful for cancer

patients. The patient *might* not completely be cured of cancer but they *can* live longer if they are treated by with marijuana.

The above excerpt shows that the modal verbs *can*, *may* and *might* were extensively used, thereby indicating the writer's limited repertoire which is typical of novice writers. The students, as the authors, need to realize the importance of the evenly use of modality devices. On the one hand, their underuse may result in overstatement. On the other hand, their overuse may cause "suspicions on the credibility of the statements" (Demir, 2018, p. 75). The appropriate use of modality devices in academic texts would decrease criticisms of the writers and increase their persuasive power on audiences (Demir, 2018).

6. Conclusion and Implications

It is undeniable that the modal verbs are one of the modality devices which the students need to master. In future teaching, it would be beneficial if the teachers take the following into consideration.

1. It is important to teach the students the core modal verbs and their semantic functions explicitly. The students need to understand that the selection of the modal verbs is a complex process because their semantic functions vary depending on the contexts in which they are used. In the case of the modal *can*, for example, in one context its meaning may be regarded as "possibility", but in another, it is considered "permission". If the students are well aware of these subtle differences in functions realized by one modal verb, they will skillfully employ various types of modal verbs in their essays. The teaching of modal verbs in the classroom should emphasize real communication among the students rather than controlled practice on linguistic aspects. Yang (2018, p. 129) stresses that "the focus on instruction should not only be put on accuracy and literal meanings of modal verbs, but on the pragmatics in discourse as well".

2. Owing to the fact that the use of core modal verbs is considerably influenced by the topic which the students are asked to write and their own levels of English proficiency, it could also be beneficial for teachers to ask their students to analyze essays written on various writing topics by writers with different levels of English proficiency. This is to allow the students to experience and understand how different topics and the writers' levels of English proficiency influence modal choices and their specific functions. The students may discuss their modal choices and uses in the classroom so that they become aware of the different uses of modals.

To conclude, modality is crucially important in academic writing. It is essential for the teachers to systematically expose their students to linguistic devices used to express modality. Also, they need to raise their students' awareness that such devices are not "merely conventions of an academic culture" (Hyland, 1995, p. 40), but are a means to assist them to participate more fully and successfully in the academic community. If they are able to use modality appropriately, their academic credibility will be strengthened and their linguistic and pragmatic competence will be advanced (Chen, 2010; Hyland, 1994; Knapp & Callaghan, 1989; Myers, 1989).

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Use of Core Modal Verbs in Academic Writing of Thai EFL Students

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