# A Review of Lexico-grammatical Features and their Functions in an Academic Discourse

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## Article info

## Abstract

Successful academic and research writings require correct comprehension of lexical and grammatical uses as a method to understandthe meanings as well as the specific functions in the texts. Woravit Kitjaroenpaiboon and Kanyarat Getkham stated that academic and research writings are not a skill naturally acquired, but needs to be learnt and practiced.. Furthermore, plentiful scholars have proven that some lexical features and grammatical features are found predominantly in the classification not in ordinary language. The lexico-grammatical in this category do not adhere to and are somewhat different from what have been explained in the traditional grammar book. The above statements prove that if one wants to draft an effectively communicative academic or research papers, we should understand how lexico- grammatical function in the particular texts. This paper hence reviews both of related literatures and research studies particularly viewed 23 lexico-grammatical characteristics (i.e. tenses and aspects, passive voice, private, public and suasive verbs, pronouns, downtoners and hedges, possibility, necessity, and prediction modals, synthetic and analytic negations, 'be' as main verbs, emphatics, causative subordinations, 'that' compliment clauses, wh-clauses, 'that' deletion, coordinating conjunctions, sentence relatives, nouns, average word length, type/token ration, predicative and attributive adjectives, adverbs, split auxiliaries, infinitives, gerunds, and participial clauses) in academic and research writings. This review article can benefit researchers who are conducting academic or research papers or others intrigued in investigating specifically underlying communicative functions of a lexico- grammatical feature(s).

## Introduction

Lexico-grammatical features are typical of academic language. Several research studies investigated lexico- grammatical features in various research papers. For instance, in 2009, Douglas Biber and Susan Conrad discovered that, in research papers, nominalizations, prepositional phrase and attributive adjectives are commonly used, while personal pronouns are scarcely applied. Present tense is much more frequently used than past tense. Modal auxiliaries are uncommon in research papers. Passives are found about a quarter of all verbs. Time and place adverbials are rare in research papers

(Biber & Conrad, 2009). In 2010, Turo Hiltunen investigated functions of lexico-grammatical constructions in research articles and found differences in the usage of declarative and interrogative clauses and as-predicative constructions (Hiltunen, 2010). Back to 1994, Douglas Biber and Edward Finegan investigated lexico-grammatical attributes in academic texts and analyzed their micro-purpose (Biber & Finegan, 1994). In 2004, John Swales investigated communicative functions of lexico-grammatical details (i.e. hedging, past tense, present tense, passive voice, and that verb complement) in research articles (Swales, 2004). In 2003, Bussaba Kanoksilapatham examined lexico-grammatical features and how they communicatively function in academic context (Kanoksilapatham, 2003). Kanyarat Getkham compared application of lexico-grammatical feature in academic texts (Getkham, 2010). In 2015, Zhang Baoya explored lexico-grammatical features in academic texts and found that each feature particularly in academic category has its own communicative function differing from what it has been explained in the basic grammar. In 2016, Kitjaroenpaiboon & Getkham (2016a; 2016b) together analyzed lexico- grammatical features in academic context and similarly found that the bases of those occurred in academic context are quite different from ones in general language. Mentioned evidences show that, in academic context, lexico-grammatical features do not adhere to the traditional grammar, but have their own communicative functions depending on a context where the lexico-grammatical features occur. Some provide specific communicative functions in academic texts (Baoya, 2015; Getkham, 2010; Kanoksilapatham, 2003; Kolln, 2009). These studies show that while it is possible to see general trends on the prominent grammatical features of academic discourse, there are still considerable variations inside the academic language. This paper offers anoverview of functions of the lexico-grammatical features in academic texts.

## Review of the Related Literatures

**1) Tenses and Their Aspects:** Tenses and aspects are the most discussed features, expressing time at, during, or over which a state or action denoted by a verb occurs. The change of tense choices can indicate a change in meaning. Tense use is not only about transforming one verb form to another but it is also a temporal implicature (Halliday, 2013). Numerous scholars have investigated tenses and their aspects in research articles and unveiled a complicated view of them (e.g. Biber, Conrad & Reppen, 1998; Celce-Murcia & Larsen-Freeman, 1999; Getkham, 2010; Gunawardena, 1989; Halliday & James, 1993; Hanania & Akhtar, 1985; Hawes & Thomas, 1997; Heslot, 1982; Kanoksilapatham, 2003; Malcolm, 1987; Oster, 1981; Rizzo, 2009; Swale & Feak, 2004; White, 2004). The native English researcher relies on three main aspects of tenses (past simple, present simple, and present perfect) to write their research articles (Hartwell & Jacques, 2014; Taylor, 2001)

*Present Simple:* Present simple provides two main communicative functions in the research article. One is to situate a particular event and another is to mark a particular proposition as a generalization (Swales, 2004). In the latter case, the use of 'present simple' indicates that the propositional information is valid regardless of time. Several studies established that 'present simple' is frequently used in the Introduction to describe established knowledge and in the Discussion to discuss results, as well as to emphasize the generality of their specific findings. Sometimes, it can be used to explain or discuss figures, tables, or graphs and discuss the significance of the findings in the Results. (Biber, Conrad, & Reppen, 1998; Charak & Norouzi, 2013; Getkham, 2010; Gledhill, 2000; Hanania & Akhtar, 1985; Hawes & Thomas, 1997; Heslot, 1982; Hyland, 1994; Li & Ge, 2009; Malcolm, 1987; Matthews & Matthews, 2007; Rizzo, 2009; Salager-Meyer, 1992; Smith & Bernhardt; 1997; Swale & Feak, 2004; Taylor, 2001; Trimble & Trimble, 1982; White, 2004).

*Past Simple:* Past simple provides two communicative functions in the research article, namely to claim non- generality about views expressed by previous studies, and to describe research activities or procedures performed (Kanoksilapatham, 2003). It is frequently used in the Methods regarding to methodology, and in the Results presenting the findings ( Barber, 1962 as cited in Rizzo, 2009; Burrough- Boenish, 2003; Charak & Norouzi, 2013; Biber, Conrad & Reppen, 1998; Gerbert, 1970; Getkham, 2010; Gledhill, 2000; Hanania & Akhtar, 1985; Hawes & Thomas, 1997; Heslot, 1982; Hyland, 1994; Malcolm, 1987; Matthews & Matthews, 2007; Salager- Meyer, 1992; Smith & Bernhardt; 1997; Swale & Feak, 2004; Taylor, 2001; Trimble & Trimble, 1982; White, 2004).

*Present Perfect:* Present perfect is mostly used for areas of studies (Swales & Feak, 2004). It predominates in the Introduction and the Discussion (Gunawardena, 1989; Matthews & Matthews, 2007;

Schramm, 1996; Swales & Feak, 2004; Taylor, 2001).

**2) Passive Voices:** English sentences can be either in active or passive voice. In terms of passive voice structure, the process done is placed first and the actor is sometimes added at the end preceded by the word 'by'. Passive voice might be used in cases, for example, where the actor is unknown or irrelevant, the writer wants to be vague about who is responsible, or to highlight the process or action done. Passive voice is frequently employed to writing academic and research papers. Several studies were conducted to investigate both the active and passive voices as well as their rhetorical functions (e.g. Alvin, 2014; Amdur, Kirwan, & Morris, 2010; Corson & Smollett, 2013, 2014; Getkham, 2010; Gross, Harmon & Reidy, 2002; Kespratoom & Kitjaroenpaiboon, 2007; Kirkman, 1975; Martin- martin, 2003; Millar, Budgell & Fuller, 2013; Seoane, 2013; Sigel, 2009; Tarone et al., 1981, 1998; Weissberg & Buker, 1990). Passive voice provides a communicative function called 'depersonalization' (Gross, Harmon, & Riedy, 2002). It is frequently used to describe what was done in the Methods and the Findings of research articles since researchers want to emphasize the materials and methods more than themselves (Alvin, 2014; Amdur, Kirwan, & Morris, 2010; Kespratoom and Kitjaroenpaiboon, 2007; Martın-martin, 2003; Swales & Feak, 2004, Tarone et al., 1981, 1998). The possible reasons why passive voice is frequently used in research articles are to avoid using the first-person pronouns, to reflect objectivity, to avoid being responsible for, and to appear scholarly sophisticated (Amdur, Kirwan, & Morris, 2010). However, studies found a decline of passive voice in research articles (Millar, Budgell & Fuller, 2013; Seoane, 2013). The decline might be because the researcher tends to write the research article as unquestionably and concisely as possible (Corson & Smollett, 2014; Kirkman, 1975; Seoane, 2013; Sigel, 2009).

**3) Private, Public, and Suasive Verbs:** Private verbs refer to unobservable states or activities that the speaker alone is aware of (Hawes & Thomas, 1997; Quirk et al., 1985). They usually occur with the non-progressive forms. Biber (1995) listed some private verbs, namely assume, ascertain, anticipate, accept, believe, check, conclude, calculate, consider, conjecture, deduce, decide, determine, demonstrate, deem, etc. 'Public verbs' imply the idea of speaking. They often co-occur with a that-clause to express a factual notion (Ayers, 2008; Baoya, 2015; Harwes & Thomas, 1997; Quirk et al.,

1985). Public verbs are such as add, acknowledge, affirm, admit, etc. 'Suasive verbs' are persuading verbs, often accompanied by a that- clause, together with the mandative subjunctive, or with the putative 'should' (Biber, 1995). Biber listed some suasive verbs, such as agree, allow, arrange, ask, beg, etc. In research articles, public verbs are used to report generalized conclusions of cited studies and report scientific results and experimental findings of the studies while private verbs are used to introduce cited research (Hawes & Thomas, 1997) while private and public verbs function to 'frame claims' (Biber, 1995; Kanoksilapatham, 2003). As can be seen, various verbs play their roles in research articles and could provide different communicative functions.

**4) Pronouns:** Pronouns are words used for substituting aforementioned nouns. They can refer to the participants in the discourse or to someone or something mentioned elsewhere.

*First Person Pronouns:* Most scholars proposed that first person pronouns are important in written dialogue or discourse because they can perform an authorial standpoint, engagement, and convey power (Hartwell & Jacques, 2014; Hyland, 2002; Swales & Feak, 2004). The first-person pronouns frequently used in research articles are 'we', 'us', 'our', or 'ours' (Bazerman, 1988). 'We' is a rhetorical device, allowing a user to distance himself from what is being said or written. In research articles, 'we' is more acceptable because it serves as the group rather than an individual (Muhlhausler & Harre, 1990). Several scholars found that 'we' is used in most research articles even in singularly authored articles (Biber & Gray, 2010; Glasman-Deal, 2010; Hyland, 2001; Kanoksilapatham, 2003). 'We' can be divided into two sub- categories namely inclusive (readers are included) and exclusive (readers are excluded). The inclusive 'we' helps engage the readers into the discourse and creates solidarity (Flottum et al., 2006). The exclusive 'we' helps the authorial self-reference and is used to describe actions or reasoning of the researcher in the research article (Flottum et al., 2006; Hyland, 2006, 2012).

*Third Person Pronouns:* third person pronouns are employed particularly in scientific articles to refer to the population being studied or other researchers when citing related studies to the research (Kuo, 1999).

*Pronoun 'It':* Pronoun 'it' provides two functions, namely referring and non-referring ones. The referring 'it' (or impersonal pronoun 'it') is employed to refer to inanimate objects, uncountable substances,

singular collections of people, and singular abstractions (a general idea not based on any particular real person, thing, or situation). The non-referring 'it' (extraposed 'it') is used as a support or prop subject, especially in expressions denoting atmospheric conditions, distance, and time (Biber et al., 1999; Quirk et al., 1985). Simply put, the extraposed 'it' refers to the use of the pronoun 'it' in the grammatical subject position, followed by 'that' or 'to' complementary clauses governed by either verbs or adjectives (Hewings & Hewings, 2002; Hunston & Sinclair, 2000; Martin, Matthiessen, & Painter, 1997; Quirk et. al., 1985; Rodman, 1994). In research articles, the extraposed 'it', followed by a verb or an adjective, is principally used to present the author's comment (e.g. it is possible that, it suggests that), to catch the readers' attention (e.g. it is noteworthy that) and to mark the authors' attitude (e.g. it is preferable that) (Rodman, 1994). The extraposed 'it' can also work as confining, expressing attitude, expressing attribution, and emphasizing (Hewings & Hewings, 2002; Kanoksilapatham, 2003).

*Demonstrative Pronouns:* Demonstrative pronouns have their own referential meaning and depends on the context they occur. Also, their uses may be considered as reference to an earlier part of the discourse (anaphoric), as reference to a later part of the discourse (cataphoric), or as reference to the extra-linguistic situation (situational reference) (Halliday & Hasan, 1996). For example, 'this' and 'that' are used to refer to a single thing or idea. 'These' and those' are used to refer to things or ideas. However, 'this' and 'these' are used when a thing or things are near in distance or time while 'that' and 'those' are far (Quirk et al., 1985). The demonstrative pronoun in the research article mark referential cohesion and refer to the immediately preceding text or the immediate textual context (Biber et al., 1999). They aid in the establishment of shared knowledge between readers and the authors (Kanoksilapatham, 2003).

**5) Downtoners and Hedges:** Biber's hedges (1995) and Quirk's et al., downtoners (1985) show similarities, where, both lower the effect on the force of the predication or verb. Several studies have been conducted to investigate hedges (e.g. Biber, 1995; Chismore & Vande Kopple, 1997; Grabe & Kaplan, 1997; Kanoksilapatham, 2003; Myers, 1997; Precht, 2000; Salager- Meyer, 1997), and it was agreed upon that the use of hedges used in research discourse are not impersonal. Hedges allow authors to express doubt or

uncertainty and to present their idea or proposition cautiously, accurately, and modestly (Hyland, 1996; Salager- Meyer, 1997). Hedges can be found in important or ample parts of speech. Hyland (1996) showed some samples of verb hedges (e.g. propose, appear, seem, indicate, suggest), adverb hedges (e.g. almost, quite, probably, fairly, possibly), adjective hedges (e.g. likely, probable) and modals that is used with another verb to express an idea such as possibility that is not expressed by the main verb of a sentence: (may, might, can, could, would). Some hedges can be used in conditional clauses (e.g. under these circumstances) and sentences (e.g. nothing is shown about). In research articles, hedges help protect researchers' statements (a definite or clear expression of something in speech or writing), and are frequently found in the Introduction and the Discussion. This is due to their purpose to convince readers that more research work needs to be pursued in the area of inquiry and to show the work being presented is justified (Salager- Meyer, 1997).

**6) Possibility, Necessity, and Prediction Modals:** Modals are well established in ESP as devices marking the author's assessment of propositions (Biber et al., 1999; Salager-Meyer, 1994). Modals consist of possibility, necessity, and prediction modals (Kanoksilapatham, 2003). Possibility modals (can, could, may, might) denote the authors' assessment of the possibility of the propositions presented in hypothetical contexts or scenarios. Necessity modals (must, should, ought to) convey personal obligation of certain events (Biber et al., 1999). Prediction modals (will, would, shall) mark predictions of events or outcomes (Hyland, 1994; Salager-Meyer, 1994).

**7) Synthetic and Analytic Negation:** 'synthetic negation' refers to 'no' and 'analytic negation' refer to 'not' (Biber, 1995). 'No' negation can be used as pronouns and determiners, while 'not' is an adverb (Biber et al., 1999). However, 'not' has a special characteristic, where the main use of 'not' is to negate a sentence. This can be done by adding a negator after the operator of the verb phrase (Quirk et al., 1985). In research articles, analytic negation denotes negativity for the purpose of exclusion, negation, denial, rejections, and questioning (Kanoksilapatham, 2003).

**8) 'Be' as Main Verbs:** In an academic discourse, 'be' is the fundamental verb used to indicate the existence of an entity or to relate an entity to its qualities or characteristics. In linguistics, it is sometimes known as a copula (a type of verb, of which the most common is

"be", that joins the subject of the verb with a complement: In the sentence "You smell nice", "smell" is a copula). Unlike transitive verbs, it does not take a direct object, but a complement, since the subject and complement of the verb 'be' relate to the same entity. The complement of 'be' can be a noun, a noun group, an adjective, or a prepositional phrase (Biber et al., 1999).

**9) Emphatics:** Emphatics consist of numerous grammatical features in an academic discourse. They include the emphasizer (for sure), the intensifying (such), the booster (a lot), the auxiliary (do) in an emphatic function or the periphrastic comparison with 'more, most' (Biber et al., 1999). In linguistics, periphrasis is the use of one or more function words to express meaning that otherwise may be expressed by attaching an affix or clitic to a word. The emphatics reinforce effect on the truth value of the clause, denote a high degree, a high point on the scale, and emphasize the meaning of the whole following predicate (Hyland, 2004; Quirk et al., 1985).

**10) Causative Subordinations:** In an academic discourse, subordinators or subordinating conjunctions are words introducing dependent clauses (Biber et al., 1999). They have syntactic roles. This distinguishes them from other clause initiators (wh-words), which can also have a role as subject, object, adverbial, etc. Biber (1995) also stated that 'because' is the only subordinator to function unambiguously as a causative adverbial. Other forms, such as 'as, for, and since', can have a range of functions, including causative.

**11) 'That' Complement Clauses:** The use of 'that' complement clauses can be applied in different syntactic categories relating to the grammatical arrangement of words in a sentence: (e.g. nouns, verbs, adjectives). The 'that' complement clause controlled by verbs, index information, integration and expansion of the idea-unit. Specifically, the 'that' complement clauses controlled by verbs provide a means to talk about the information in 'that' clauses. The verbs commonly controlling 'that' complement clauses are likelihood verbs (e.g. appear, seem, presume, think, consider), factual verbs (e.g. demonstrate, confirm, find, show, decide), and attitudinal verbs (e.g. agree, expect, hope, feel). The 'that' complement clauses controlled by adjectives, index expression of the user's agreement, opposition, evaluation, and interpretation of propositions. The adjectives controlling 'that' complement clauses are likelihood adjectives (e.g. likely, possible, probable), attitudinal adjectives (e.g. interesting, acceptable,

necessary), and factual / certainty adjectives (e.g. impossible, evident, obvious) (Biber, 1995; Kanoksilapatham, 2003).

**12) Wh-clauses:** In an academic discourse, a Wh-clause is a relative clause, acting as a modifier for a noun or noun phrase (Richards et al., 1992) and is usually introduced by a relative pronoun such as that, which, who, when, or where. A relative clause gives additional information about the head nouns (Bazerman, 1984, 1988; Eastwood, 1999; Swan, 1996; Thomson & Martinet, 1993)

**13) 'That' Deletion:** 'That' is deleted when a that-clause becomes a complement or direct object and when a subject of that-clause is extraposed (shifted (a syntactic construction) to the end of a sentence) 'it' (Quirk et al., 1985). Biber (1995) restricts his definition to the subordinator-that deletion and found the following three rules:

Rule I) SUA or PUB or PRV + PRO or N + AUX or V
Example:

| I | think | (that) | you | can | do | that |
|------|------|------|------|------|------|------|
| PRON | PRV | | PRO | AUX | V | PRON |

Rule II) SUA or PUB or PRV + ADJ or ADV or DET or POSSPRO + (ADJ) + N + N + AUX or V
Example:

| I | explained | the thing | (that) | you | told | me |
|------|------|------|------|------|------|------|
| PRON | PUB | DET + N | | N | V | PRON |

Rule III) SUA or PUB or PRV + demonstrative pronoun or SUBJPRO.
Example:

| The news | reported | (that) | this | drug | is | illegal |
|------|------|------|------|------|------|------|
| N | PUB | | Demonstrative PRON | N | V | ADJ |

**14) Coordinating Conjunctions:** Coordinating conjunctions are applied to build coordinate structures, in both phrases and clauses (Biber et al., 1999). Unlike prepositions and subordinators, coordinating conjunctions link elements which have the same syntactic (relating to the grammatical arrangement of words in a sentence) role. The main coordinators are and, but, and or, with a core meaning of addition, contrast, and alternative respectively. Coordinating conjunctions are divided into 'phrasal' and 'clausal' coordination. If the coordinated elements cannot be identified to be extending a simple noun phrase, we speak of 'clausal coordination'. This feature provides functions of expanding and connecting idea units at different levels of clauses and phrases (Biber et al., 1999). The complexity of phrases and clauses in research articles reflect the typical complexity of the subject matter and the density of information (Biber et al., 1999).

**15) Sentence Relatives:** Biber et al. (1999) noted that some types of relative clauses, in an academic discourse, are not used as postmodifiers (a word or phrase that is used after another word to limit or add to its meaning: Postpositive adjectives, for example "general" in "secretary general", are the post-modifiers of noun phrases) of nouns. This is true of nominal relative clauses, where the wh-word can be regarded as representing both the antecedent and the relativizer. It also applies to so-called sentential relative clauses or sentence relatives, introduced by 'which'. In addition to this, Quirk et al. (1985) observed a syntactic feature that is very important for automatic parsing of sentence relatives. Sentential relative clauses parallel nonrestrictive postmodifying (to modify the sense of (a word or phrase) by being placed after it) clauses in noun phrases in that they are separated by intonation or punctuation from their antecedent. They are commonly introduced by the relative word 'which'.

**16) Nouns:** Nouns can function as subject, object, including complement of clauses and prepositional phrases (Quirk et al., 1985). Nouns fall into different sub-classes. Quirk et al. (ibid) described the subclasses of nouns with the following diagram.
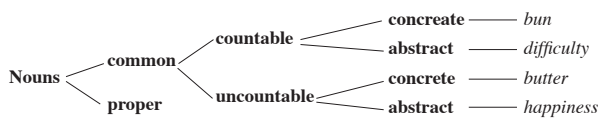


**Figure 1:** Different Classes of Nouns

Proper and common nouns are the principal means by which the researcher refers to entities or concepts (Kanoksilapatham, 2003). Nominal elements are used as a main lexical means of referential specification or to establish what the text is about (Biber et al., 1999).

**17) Average Word Length:** Average word length refers to the mean length of the words in a text, in orthographic letters (Biber, 1995). Biber also stated that the higher the average word length of text, the higher the informational weight or density. Hence, this feature indexes a focus on information (Kanoksilapatham, 2003).

**18) Type /Token Ratio:** Type / token ratio (TTR) is the ratio between the number of different lexical items in a text and the total number of words in that text (Biber, 1995). TTR is a percentage = (types / token) x100. Longer text tends to have more repeated words and thus a much lower TTR. If TTR in the text is low, it means there are many more repeated words in the text. If TTR is high in the discourse, it means that the text has fewer repeated words and greater lexical density. High TTR in a text indicates that the discourse has a greater variety of word types and an integrated higher amount information.

**19) Predicative and Attributive Adjectives:** Predicative adjectives and attributive adjectives are used to modify nouns (especially of an adjective) restrict or add to the sense of (a noun). (Biber et al., 1999). The attributive adjective is significant in the research article. It allows the researcher to describe, clarify, and qualify additional information about scientific phenomena or entities (Biber et al., 1999; Kanoksilapatham, 2003) while predicative adjectives provide the researcher with a means to express their stance (Auria, 2008; Charles, 2006a; 2006b; Hunston & Thompson, 2001; Getkham, 2010; Soler, 2002; Tutin, 2009).

**20) Adverbs: Adverbs:** Adverbs can provide different communicative purposes or functions. They usually mark the writers' attitudes and feelings to the proposition. They indicate some degree or quantity of the quality represented by the verb, adjective or the adverb that they pre-modify (make partial or minor changes to (something) in advance, typically to improve it or to make it less extreme). (Baoya, 2015; Hyland, 1998; Varttala, 1999; Ventola, 1997).

**21) Split Auxiliaries:** Split auxiliary is when an adverb is placed between an auxiliary and a following verb (Quirk et al., 1985). It marks the user's attempt to persuade (cause (someone) to do something through reasoning or argument) the readers (Biber, 1995). It can create emphasizing effects (Quirk et al., 1985).

**22) Infinitives:** Infinitives can be used in an academic discourse to integrate or expand ideas- units in both written and spoken dialogue or discourse to introduce an aim, goal, objective, and purpose, to introduce a method, to frame points in a discussion, to introduce a complement and as an adverbial purpose clause (Niko, 1994; Getkham, 2010).

**22) Gerunds:** Gerunds are a type of verbal that ends in 'ing' and is used like a noun. Similar to infinitives and nominalization (the process of making a noun from a verb or adjective), gerunds can, in an academic discourse, also function as the subject of the sentence, the direct object, or as the subject complement. Gerunds can also act as an object of a preposition. (Grieve et al., 2008). With a gerund, the user tries to focus more on the action (Halliday, 1998).

**23) Participial Clauses:** Participial clauses are shortened, dependent clauses and a form of adverbial clauses, enabling the user to provide information economically in an academic discourse (Biber, 2004).

To ease understanding, Table I helps recapitulate communicative functions of each lexico-grammatical feature used in research articles.

**Table 1** summarizes communicative functions of each lexico-grammatical feature used in research articles.

| Lexico-grammatical Feature | Rhetorical Function (s) | Cited Scholar (s) |
|---|---|---|
| Present simple | To represent observations, descriptions, definitions, repeated actions, material properties, universal laws, and processes. | Lackstrom et al. (1973), Oster (1981) |
| | To represent 'timelessness' and emphasizes objective experience and the abstract, subjective ideas. | Malcolm (1987) |
| | To emphasize the relation of previous research. | Salager-Meyer (1992) |
| | To describe reported past research. To discuss the results. | Trimble and Trimble (1982) |
| | To talk about given information. | Halliday (2013) |
| | To mention previous facts or statements. To mention precedent knowledge. | Smith and Bernhardt (1997) |
| | To address background information and the importance of the study in the introduction sections. To indicate that the writers believe the research findings are still true and relevant, even though those research studies may have been conducted long time ago. To explain or discuss about figures, tables, or graphs in the findings section. To explain significance of the results. | Swales and Feak (2004) |
| | To describe what is contained or shown in the paper. To describe an action that is accomplished by the uttering of it. To represent the writer's present mental state or what the writer avers to be truth. To add a timeless dimension to enhance generalizability; depicts unchanging entities. To describe procedures habitually used. | Taylor (2001) |
| | To emphasize previously ratified knowledge in most of the introduction and the discussion sections. To indicate that the propositional information is valid regardless of time. To situate a particular event in the present tense and the other is to mark a particular proposition as a generalization. | Hartwell and Jacques (2014) |
| | To express generality. | Swales (2004) |
| | To mention precedent knowledge or universal truth. To emphasize the generality of their specific findings in the discussion section. | Getkham (2010) |
| | To discuss or quoting some established knowledge especially in the introduction and discussion section. | Li and Ge (2009) |
| Past simple | To represent 'time boundedness'. To emphasize the current experiment. | Malcolm (1987) |
| | To indicate the undeveloped previous results. | Salager-Meyer (1992) |
| | To describe apparatus in the methods sections. To present research results in the result section. | Trimble and Trimble (1982) |
| | To talk about new information. | Halliday (2013) |
| | To report the methods and findings of the current research. To provide unprecedented knowledge. | Smith and Bernhardt (1997) |
| | To describe what was done in the current study in the methods section (with 'passive voice'). To detail the obtained results in the findings section. | Swales and Feak (2004) |

**Table 1** (Continue)

| Lexico-grammatical Feature | Rhetorical Function (s) | Cited Scholar (s) |
|---|---|---|
| | --- To explain events, actions, or processes completed in the past: To describe apparatus designed for a specific experiment. | Taylor (2001) |
| | --- To describe what they did and what they found in the methods and the results sections. | Hartwell and Jacques (2014) |
| | --- To claim non-generality about views expressed by previous studies. To describe research activities or procedures performed. | Kanoksilapatham (2003) |
| | --- To mark particular events, activities occurring during the study. To report research findings. To mark generality to science. | Getkham (2010), Charak and Norouzi (2013) |
| | --- To report results or provide some current knowledge gained from the current study. To describe the methods and data of the experiment. | Gradhill (2000), Burrough-Boenish (2003), Matthew and Matthew (2007) |
| Present prefect | To describe a group of past experiment relevant to the current study. | Gunawardena (1987) |
| | --- To talk about precedent knowledge which is relevant to unprecedented knowledge is reported. | Schramm (1996) |
| | --- To mention previous facts or statements (precedent knowledge) that affect the researcher' current study. | Smith and Bernhardt (1997) |
| | --- To communicate the 'recency' or 'currency' of previous research studies. | Swales and Feak (2004) |
| | --- To relate a past situation to the present moment: To refer to a prior situation with current relevance. | Taylor (2001) |
| | --- To refer to other previous research. To imply that the result of previous studies is still true and relevant today. To connect the previous research with the present study. | Matthews and Matthews (2007) |
| Active voices | To explain the author's own work. | Tarone et al. (1981) |
| | --- To describe an apparatus built or employed in the reported research (with 'simple present tense'). | Wingard (1981) |
| Passive voices | To avoid mentioning who did the titrating and the dissolving. | Corson and Smollett (2014) |
| | --- To report the methods and materials of their studies (with 'simple past tense'). | Martın (2003) |
| | --- To describe what was done methods section (with 'simple past tense'). To discuss previous research. To describe the work of other researchers. | Swales and Feak (2004), Tarone et al. (1981) |
| | --- To describe the sequential procedures of the current research. --- | Baoya (2015), Bazerman (1988), Hannia and Akhtar (1985), Getkham (2010), Kanoksilapatham (2003), Riley (1991), Swales (2004), Trimble and Trimble (1982), Wilkinson (1992), Wingard (1981) |
| | To depersonalize the author himself from the writing. | Gross, Harmon and Reidy (2002) |
| Type/Token Ratio | To indicate that the discourse has a greater variety of word types and integrated a higher amount information (If high TTR in a text is shown). | Biber (1995) |
| Gerunds | To function as the subject of the sentence, the direct object, or as the subject complement. To act as an object of a preposition. To focus on action rather than doers. | Biber (1995), Grieve et al. (2008), Halliday (1994; 1988), Halliday and Martin (1993), Myers (1994) |

**Table 1** (Continue)

| Lexico-grammatical Feature | Rhetorical Function (s) | Cited Scholar (s) |
|---|---|---|
| Public verbs | To express a factual proposition (with that-clause).<br>---<br>To report generalized conclusions of cited studies whereas the certainty verbs (e.g. state, report, note) are used to report scientific results and experimental findings of the studies.<br>To frame claims.<br>---<br>To state the propositions in reported speech.<br>---<br>To talk about evaluation, information or findings. | Quirk et al. (1985)<br><br>Hawes and Thomas (1994)<br><br><br><br>Baoya (2015)<br><br>Ayers (2008) |
| Private verbs | To introduce cited research.<br>To recount views or ideas generally held by the research community.<br>To frame claims. | Hawes and Thomas (1994) |
| First Person Pronouns | To reflect the active role of the authors and the personalizing characteristics of research discourse.<br>---<br>To reflect the active role of the authors and the personalizing characteristics of research discourse.<br>To exert authors' authority in addressing intellectual research questions and constructing relevant strategies to answer those questions.<br>---<br>To perform authorial stance.<br>To describe actions or arguments of the authors and not a positioning of the reader through the use of an all-inclusive pronoun. | Bazerman (1988)<br><br>Kanoksilapatham (2003)<br><br><br><br>Hartwell and Jacques (2014) |
| Third Person Pronouns | To refer to other researchers when writers cite studies related to their research.<br>To create a research space. | Kuo (1999) |
| Pronoun 'It' | To provide a mean for authors to express their comments and attitudes without making their identification explicit. | Quirk et al. (1985), Biber et al. (1999), Hewings and Hewings (2002), Hunstun and Sinclair (2000), Martin, Matthiesssen, and Painter (1996) |
| Demonstrative Pronouns | To signal high focus on the referent to which the writer wants to draw the reader's attention.<br>---<br>To signal a focus and topicality in texts.<br>---<br>To reduce potential ambiguities that often result from the use of pronominal this and also to endow the text a more professional style.<br>---<br>To be used as pronouns as well as determiners.<br>---<br>To refer to a complex predication. | Rodman (1991)<br><br>Strauss (2002)<br><br>McCarthy (1994)<br><br><br>Swales and Feak (2004)<br><br>Gray (2010) |
| Downtoners and Hedges | To allow authors to express uncertain scientific propositions, conveying the truth of the statement as far as can be determined as well as the authors' attempt to express their propositions as precisely as they can.<br>To prevent the author from direct responsibility.<br>---<br>To allow authors to be accurate in expressing their propositions, to cover themselves and to avoid direct personal responsibility for their statements. To allow authors to be modest in stating their propositions especially in specialized journals whose readers are expert in the field.<br>To protect author's statements.<br>To convey precision, imprecision, and interpersonal positive politeness. | Hyland (1996)<br><br><br><br>Salager-Meyer (1997) |
| Possibility Modals Necessity Modals Prediction Modals | To express permission and possibility and ability.<br>---<br>To be used as devices marking the author's assessment of propositions.<br>---<br>Possibility modals denote the authors' assessment of the possibility of the propositions presented in hypothetical scenarios.<br>--- | Quirk et al. (1985)<br><br>Biber et al. (1999), Ventora (1997), Salager-Meyer (1994)<br><br>Kanoksilapatham (2003) |

**Table 1** (Continue)

| Lexico-grammatical Feature | Rhetorical Function (s) | Cited Scholar (s) |
|---|---|---|
| | Necessity modals convey personal obligation of certain events. | Biber et al. (1999) |
| | --- | |
| | Prediction modals mark predictions of events or outcomes. | Hyland (1994), Salager-Meyer (1994) |
| Synthetic and Analytic Negation | To denote negativity in research articles for the purpose of exclusion, negation, denial, rejections, and questioning. <br> To index the authors' expression of non-substantiated findings. | Baoya (2015), Kanoksilapatham (2003) |
| 'Be' as a Main Verb | To be used as an aspect auxiliary. <br> To be used as a passive auxiliary. <br> To be used as a main verb. <br> To link the subject noun phrase with a subject predicative or obligatory adverbial. | Biber et al. (1999) |
| Emphatics | To reinforce effect on the truth value of the clause or part of the clause in which they are applied. | Hyland (2004), Quirk et al. (1985) |
| | --- | |
| | To emphasize the meaning. | Biber et al. (1999) |
| Causative Subordinations | To introduce dependent clauses. | Biber et al. (1999) |
| That and WH Clauses | To modify key aspects of how journals are presented, both providing additional information and, very often, imparting a positive 'spin' to that information. <br> To delineate a specialized area of expertise and claiming a central significance in this area. | Tse and Hyland (2010) |
| | --- | |
| | To index information integration to expand idea-unit. | Biber (1995) |
| | --- | |
| | To talk about the information in the independent clause (the authors' stance is given in the main clause and the propositional information is given in the 'that' complement clause). | Winter (1984) |
| | --- | |
| | To index information integration and expansion of the idea-unit. <br> To talk about the information in 'that' independent clause. | Kanoksilapatham (2003) |
| 'That' Deletion | To shorten the complex sentence (adjective clause). | Biber et al. (1999) |
| Non-phrasal Coordinating Conjunctions | To build coordinate structures, both phrases and clauses. <br> To link elements which have the same syntactic role. <br> To expand an idea unit which is more complex (the complexity of phrases and clauses in research articles reflects the typical complexity of the subject matter and the density of information in research studies). | Biber et al. (1999) |
| Sentence Relatives | To represent both the antecedent and the relativizer. | Biber et al. (1999) |
| Place Adverbials | To express positional condition. | Quirk et al. (1985) |
| Time adverbials | To express temporal condition. | Quirk et al. (1985) |
| Predicative and Attributive Adjectives | To be used as subject predicative complementing a copular verb or object predicative following a direct object. <br> To modify nominal expressions, preceding the head noun or pronoun. <br> To provide descriptive details about the intended referents. | Biber et al. (1999) |
| | --- | |
| | To describe, clarify, and qualify additional information about scientific phenomena or entities. | Kanoksilapatham (2003) |
| | --- | |
| | To provide the authors with a mean to express their stance. | Auria (2008), Charles (2006), Hunston and Thompson (2001), Getkham (2010), Soler (2002), Tutin (2009) |
| Adverbs | To mark the writers' assessment (attitudes and feelings) of the proposition. <br> To index the writers' attitude and degree of certainty towards the proposition in the clause, its generalizability or its expectedness. <br> To indicate some degree or quantity of the quality represented by the verb, adjective or the adverb that they pre-modify. <br> To provide, including focusing, viewpoint, and evaluative. | Baoya (2015), Carter and McCarthy (2006), Hyland (1998), Sack (1971), Skelton (1997), Varttala (1999), Ventola (1997) |

**Table 1** (Continue)

| Lexico-grammatical Feature | Rhetorical Function (s) | Cited Scholar (s) |
|---|---|---|
| That Verb Complements | To facilitate the expression of value assessment of the propositional information and fulfill function of evaluating statement. | Baoya, (2015), Getkham (2010), Kanoksilapatham (2003) |
| Prepositional Phrases | To function as adverbials at clause level, or as postmodifiers of noun phrases or complements of adjectives / adverbs at phrase level.<br>To pack large amounts of information and are used as a device integrating referential information in a discourse. | Hasselgard, Lysvag, and Johansson, (2012), Baoya (2015), Chafe (as cited in Niko, 1994) |
| Adverbial Subordinators | To show slight and major contrast, give reasons and comparisons and, indicate time relationships, place, and conditions in the research. | Baoya (2015) |
| Participial Clauses | To provide information in an economical way. | Biber (2004) |
| Adverbs | To mark the writers' assessment (attitudes and feelings) of the proposition.<br>To index the writers' attitude and degree of certainty towards the proposition in the clause.<br>To indicate some degree or quantity of the quality represented by the verb, adjective or the adverb that they pre-modify.<br>To provide, including focusing, viewpoint, and evaluative. | Hyland (1998), Skelton (1997), Varttala (1999), Ventola (1997), Baoya (2015), Sack (1971), Carter and McCarthy (2006) |
| Split Auxiliaries | To explicate marking of the writers' own persuasion or argumentative discourse designed to persuade the readers. | Biber (1995), Quirk et al. (1985) |
| To Infinitives | To integrate or expand ideas-unit in both written and spoken discourse to introduce an aim, goal, objective, and purpose, to introduce a method, to frame points in a discussion, to introduce a complement and as an adverbial purpose clause. | Chafe (as cited in Niko, 1994), Getkham (2010), Kanoksilapatham (2003) |
| Word Length | The higher the average word length of text, the higher its informational density.<br>---<br>To express that the text is a focus on information (if word length is high). | Biber (1995)<br><br>Kanoksilapatham (2003) |
| Nouns | To refer to entities, concepts, or nominal elements.<br>To establish what the text is about. | Quirk et al. (1985) |

## Conclusion

Lexico-grammatical features have been a focus of several studies. Some studies investigated only one lexico-grammatical characteristic or feature to find its communicative purposes while others studied sets of features. These review of literatures on lexico-grammatical features showed that lexico-grammatical features in research articles are no longer restricted to the functions as described in traditional grammar, but can have their particular or specific communicative functions. Both general language and academic language similarly uses the same lexico-grammatical features but the functions of some features are found to be different. Generally academic texts, particularly in research articles, are characterized by a nominal style with relatively few finite verbs. They have relatively simple clause structure but highly complex noun phrase structure. They use a narrow range of tenses and modals in specialized ways. Personal agency is often backgrounded so that disciplinary concepts and entities appear in thematized positions, for example as subjects, and this leads to frequent use of the passive voice. This style has been called 'synoptic' in contrast to the 'dynamic' style of conversation, with many dependent clauses and fairly simply noun phrases. As student writing becomes more mature it adopts more of these synoptic characteristics (Philip, 2021).

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