

# Acknowledgement System in Introduction Section of Engineering Research Articles

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## ABSTRACT

Citing other authors works is essential in Research Articles (RAs). The citation is used to support claims academically. The citation is described as a way to interact with the readers and to acknowledge other scholars. Viewing from Appraisal framework developed by Martin and White [1] which is based on Halliday's interpersonal metafunction, this activity is described as Engagement system. This study focused on exploring acknowledgement, a branch of Engagement system, found in Mechanical Engineering RAs published by Elsevier. Applying qualitative method, the data were taken from five research articles of Mechanical Engineering in 2021. Thus, the data were examined using the framework of Engagement system. What can be highlighted from the results is that the acknowledgment serving as citation may be realized by projection of mental and verbal clauses with limited choice of lexical verbs, such as report, emphasize, propose, realizing both types of process. Nevertheless, the implication of this study may help EAP practitioners in teaching citation of RAs for Mechanical Engineering learners.

## I. Introduction

Academic discourse refers to the ways in which people think and use language in the academy. Its importance stems in large part from the fact that language is used to accomplish complex social activities such as educating students, demonstrating learning, disseminating ideas, and constructing knowledge. Textbooks, essays, conference presentations, dissertations, lectures, and research articles are at the heart of the academic enterprise and serve as the foundation for education and knowledge creation [2]. Research articles (RA) as a type of academic genre possess certain criteria. One of the criteria is known as stance and engagement. The term stance is used to refer to the writer's textual "voice" or community-recognized personality. This is an attitudinal, writer-focused function concerned with how writers present themselves and convey their judgments, opinions, and commitments. Whereas, engagement refers to how writers recognize the presence of their readers rhetorically in order to actively pull them along with the argument, include them as discourse participants, and guide them to interpretations [3]. Hyland [2] listed some characteristics of engagement which consist of Reader pronouns, Directives, Appeals to shared knowledge, and questions.

Meanwhile, Martin and White [1] and Martin and Rose [4] use the term *engagement* as a type of Appraisal system. Engagement encompasses resources that introduce additional voices into a discourse through projection, modalization, or concession; the key distinction here is whether one voice (monogloss) or more than one voice is used (heterogloss) [4]. The differences between monogloss and heterogloss may be seen in the examples in the Table 1. As seen in the examples that in monoglossic system, there is no recognition for dialogistic alternatives. Whereas in heteroglossic one, it offers dialogistic alternatives which tend to achieve through projection [5].

Table 1. Monogloss and heterogloss

Monoglossic (no recognition of dialogistic alternatives)	Heteroglossic (recognition of dialogistic alternatives)
The banks have been greedy (monogloss)	<u>There is the argument though that</u> the banks have been greedy. <u>In my view</u> the banks have been greedy. <u>Callers to talk back radio see</u> that banks as being greedy. <u>The chairman of the consumers association has stated that</u> the banks are being greedy. <u>There can be no denying</u> the banks have been greedy <u>Everyone knows</u> the banks are greedy.

Furthermore, unlike monogloss system, heterogloss one could be categorized into contraction and expansion as the resource of attitude. Contract means *X demonstrated that* ..... While expand refers to *X is claiming that*..... This can be illustrated in Figure 1.

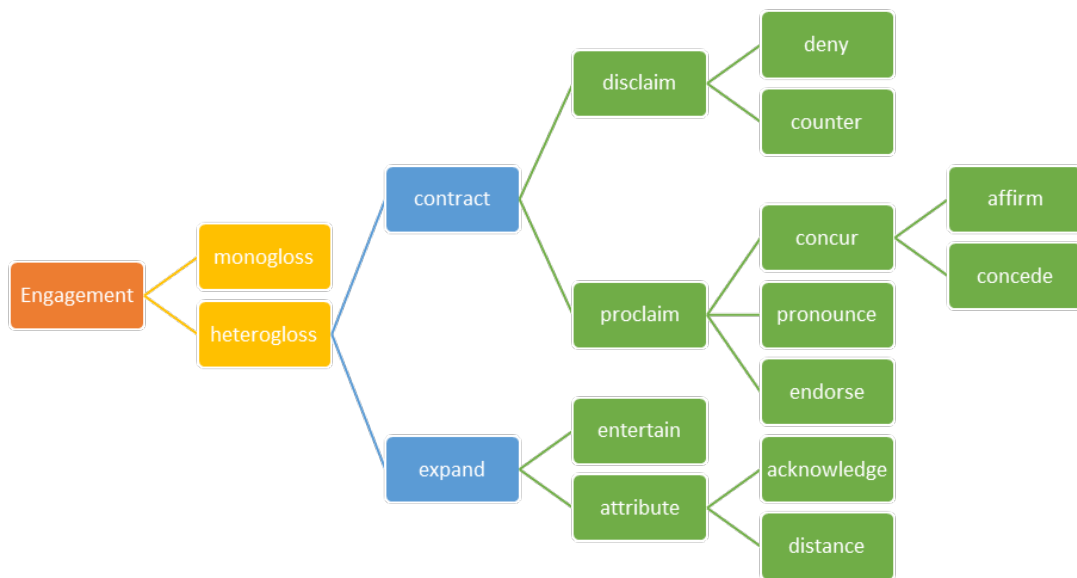


Fig. 1. Engagement system

Besides, dialogic expansion may serve to entertain or to attribute which is specified into acknowledge or distance. The entertain may be identified through lexicogrammar, such as *possibly, probably, I think, it may be, it seems*. And acknowledge could be described as using lexicogrammar *Halliday argues that* .....; *Many australians believed that* .....; *it's said that*...; *according to*...., while distance can be represented by *Chomsky claimed to have shown that* ....

Based of the discussion above, this study focused on Engagement found in RAs of Mechanical Engineering, especially acknowledge which is a kind of attribute as shown in Figure 1. Acknowledge was choosen since it is the source for citation which is critical in writing RA. Therefore two questions were addressed in this study. First, what clause types used for the projection realizing acknowledge in RAs of Mechanical Engineering. Second, what lexical verbs are found to realize the process.

Engagement system has been used for investigating various section of research articles. The framework has been employed to explore literature review section of Thai and international research articles [6]. This study focusing on literature review section of Thai and international journal reveals interesting findings. Although Thai's journal authors conform to be expert academic writers, they sound more authoritative and imposing to the readers. Another study which examines introduction section of international journals [7] found out that both of engagement systems exist. Monogloss system indicates that the authors of the articles show no engagement with other viewpoints while heterogloss system is dominated by acknowlege resource meaning the authors support the idea of

others' authors by acknowledging them. There is also a study of engagement in research articles of three different types of journal [8]. By comparing engagement markers of introduction and conclusion sections in English Physics research articles (RA) published in English-medium international journals written by American English writers, international English-medium journals written by Persian writers, and English research articles publishing in English-medium national journals written by Persian, the results show although American academics and internationally published Persian academics' metadiscoursal preferences are relatively the same, Persian authors tend to be affected by cultural preferences when choosing their engagement resources. Swear [9] investigated the Heteroglossic-Engagement patterns identified in 20M Ras written in English by Iraqi academic researchers and published in Engineering and technology journal published by the University of Technology. The results of the study show the predominant of Contractive patterns compared with the Expansive patterns. Hood [10] who focused her study on Ras. Although she used large corpus in her investigation, she recommended to do special examination on specific discipline.

Investigating engagement in RAs of Mechanical engineering may offer some benefits. Theoretically, the findings may be used as a model of how to establish interaction in RAs of Mechanical Engineering through lexicogrammar, especially in introduction section. Practically, the grammatical model could be used by English for Academic Purposes (EAP) practitioners to improve learners' ability in academic writing since the instances used in the model are related to the learners' discipline. As the problem in understanding science is the language of science [11], especially lexicogrammar [12].

## II. Method

The method used in this study was descriptive qualitative. The data were obtained from the introduction section of five RAs of Mechanical Engineering published by Elsevier [13]–[17] which is a leading world publisher ranking journals by Scopus index. The analysis of the data Appraisal framework of Martin and White [1] and supported by Hood study which focus on academic discourse, especially RA [10]. Appraisal system works on three sub-system, one of which is engagement. As seen in Figure1, acknowledge belongs to engagement system. In RA, it serves to acknowledge others through citation in order to strengthen the author claims. It is achieved through projection either using mental clauses or verbal clauses Mental processes project thoughts or ideas, while verbal processes project wordings or locutions, with those ideas and locutions representing separate clauses linked in a logico-semantic projection relationship (Halliday & Matthiessen 2004: 443) in Hood [10]. Projected verbal and mental processes are highlighted, and clause boundaries are denoted with // in:

- (1) Halliday (1993) argues // that science has developed a highly sophisticated way of representing ideas that makes writing science especially difficult for students.
- (2) Halliday (1993) argues // “science has developed a highly sophisticated way of representing ideas that makes writing science especially difficult for students.”
- (3) Halliday (1993) believes // that writing science is especially difficult for students because of the way ideas are represented.

## III. Results and Discussion

### A. Results

The results underline that projection is realized solely by verbal clauses and with limited number. The verbal process is only realized by four lexical verbs. They are *report*, *emphasize*, *suggest*, and *propose* as seen in the samples below. However, the verbal clauses represent either proposition (1)-(3) or proposal (4)-(6) as classified by Halliday and Mathiessen [5].

- (1) Pavlina [9] reported // that the transition from austenite to martensite in AHSS induced alterations in the elastic modulus and impacted the yield strength during deformation.
- (2) while Yang [10] reported // that the phenomenon stemmed from the mobile dislocation pileup adjacent to the grain boundaries.

- (3) while Wagoner [13] emphasized // that the constitutive model (considering the effect of different strain paths) should be widely adopted to improve the accuracy of the sheet or tube bending simulations.
- (4) Chu [29] suggested // that with sufficiently supporting internal pressure, the tube can be compressed by the radial compression of the die.
- (5) Lambropoulos [30] has suggested // that the depth of SSD (in  $\mu\text{m}$ ) resulting from abrasive processes lies within the bounds given by the expression:  $0.3D^{0.68} < 2D^{0.85}$ , where D is the size (in  $\mu\text{m}$ ) of the abrasive used during the grinding operation.
- (6) Clausen [22] proposed // that cross-section deformation can be mitigated by increasing the thickness and die radius.

## B. Discussion

As previously mentioned, the projection found in the data is only realized by single type of clauses, that verbal clause. Although the clauses only belong to verbal one, but, they are used quote either proposition or proposal.

### 1) Proposition

The following verbal clauses owns verbs which serves as process in verbal clauses to restate proposition [5]. The proposition here serving idea represented by dependent clause *that the transition from austenite to martensite in AHSS induced alterations in the elastic modulus and impacted the yield strength during deformation* (1), *that the phenomenon stemmed from the mobile dislocation pileup adjacent to the grain boundaries*, and (3) *that the constitutive model (considering the effect of different strain paths) should be widely adopted to improve the accuracy of the sheet or tube bending simulations*. The ideas are the reports of (1) and (2) and is emphasized by Sayer which are cited by the author. These are the sources used by the author to acknowledge other writers and simultaneously to support his/her claim.

- (1) Pavlina [9] reported // that the transition from austenite to martensite in AHSS induced alterations in the elastic modulus and impacted the yield strength during deformation.
- (2) while Yang [10] reported // that the phenomenon stemmed from the mobile dislocation pileup adjacent to the grain boundaries.
- (3) while Wagoner [13] emphasized // that the constitutive model (considering the effect of different strain paths) should be widely adopted to improve the accuracy of the sheet or tube bending simulations.

### 2) Proposal

Meanwhile, the verbal clauses (4)-(6) owns verbs which serves as process in verbal clauses to project proposal [5]. The proposals are represented by dependent clauses *that with sufficiently supporting internal pressure, the tube can be compressed by the radial compression of the die* (4), *that the depth of SSD (in  $\mu\text{m}$ ) resulting from abrasive processes lies within the bounds given by the expression:  $0.3D^{0.68} < 2D^{0.85}$ , where D is the size (in  $\mu\text{m}$ ) of the abrasive used during the grinding operation* (5), and *that cross-section deformation can be mitigated by increasing the thickness and die radius* (6). The ideas suggested come from Sayer (4) and (5) and the idea proposed is also from Sayer. By using the projection, the author is trying to acknowledge the Sayer or the writer as well as supporting his/her claims.

- (1) Chu [29] suggested // that with sufficiently supporting internal pressure, the tube can be compressed by the radial compression of the die.
- (2) Lambropoulos [30] has suggested // that the depth of SSD (in  $\mu\text{m}$ ) resulting from abrasive processes lies within the bounds given by the expression:  $0.3D^{0.68} < 2D^{0.85}$ , where D is the size (in  $\mu\text{m}$ ) of the abrasive used during the grinding operation.
- (3) Clausen [22] proposed // that cross-section deformation can be mitigated by increasing the thickness and die radius.

#### IV. Conclusion

In conclusion, the projection has a limited used in RAs of Mechanical Engineering. In addition, it is only realized solely by verbal clause. The verbal process in the clauses is realized by lexical verbs *report*, *emphasize*, *suggest*, and *propose*. But the verbal clauses serve to project proposition and proposal both of which in the form of ideas. The projection is used by the author to engage with other writers in order to support their claims. Thus, the projection is the source to acknowledge. Furthermore, the findings may be used for practitioners in teaching EAP for Mechanical Engineering students, especially for teaching citation style.

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