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Teaching Referencing Skills to Undergraduate Aeronautical Engineering Students

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Abstract

This contribution presents a series of lessons to teach referencing skills to undergraduate aeronautical engineering students. The accurate use and documentation of source material and literature forms an essential element of academic integrity and publication ethics. This is even truer today when students may feel tempted to employ generative artificial intelligence (GAI) tools for writing assignments. With diverse student bodies in global education, it is necessary to establish a common understanding of referencing standards and academic rigour in writing, which is the motivation for this pedagogical intervention. The teaching sequence begins with a focus on writing figure captions, introducing the need for referencing all materials that students have not created themselves. In a second session, in-text referencing is discussed in detail, and learners are given a style sheet for producing a list of references. Based on the corresponding bibliographical information, students are then asked to complete this list for homework. Furthermore, they are required to produce a graded written assignment to demonstrate that they have grasped the concept of professional academic referencing. They receive feedback on their corrected assignments in class to clarify open questions and address any misconceptions about academic writing. This writing task is repeated in the subsequent semester to consolidate learners' referencing skills. The lesson series presented here is well suited to be transferred to higher education writing classes in similar contexts.

Keywords: *ESP, EMI, higher education, referencing skills, ethics, undergraduate*

1. Introduction

Global higher education is characterised by diverse student cohorts in terms of international mobility, social background, and prior education. Varying nationalities, school types, and life experiences contribute to attitudes, beliefs, habits, and expectations concerning study programs and learning. On the one hand, these individual experiences tremendously enrich each group of learners, but, on the other, they may also pose pedagogical challenges, particularly when students are transitioning from secondary to tertiary education.

This paper describes a series of lessons on teaching referencing skills to undergraduate aeronautical engineering students in an English for specific purposes (ESP) course. This pedagogical intervention aims at creating a common understanding of academic ethics and rigorous referencing standards, which is essential for writing tasks such as the bachelor's thesis. The contribution, therefore, is motivated by closing the transition gap from secondary schooling to tertiary studies and enculturating learners into a professional academic writing environment. Furthermore, the lesson sequence blends ESP with English-medium instruction (EMI) aspects when students need to produce engineering reports and presentations in English.

2. Writing Figure Captions

As a starting point, the first session centres on figure captions and the need for referencing all materials students have not created themselves. For this purpose, learners receive examples of different figure and table captions, which they analyse in groups and discuss with the teacher. This analysis and discussion reveal particularities and principles of writing professional and complete captions for graphical and tabular elements in reports and theses. It is useful when these examples show a great variety in caption length, layout, and formatting, so that there are several differences for discussion. For instance, some figure and table captions are very concise, whereas others are more detailed, which depends on the nature and contents of the materials they describe. After also analysing the use of references in captions, students draw a graph, chart or diagram in an aerospace context themselves and write a complete caption for their figure. They further produce a sentence anchoring their figure and caption in an imaginary report. The teacher may need to draw students'

attention to the necessity of not just labelling each figure or table but also to explain it briefly in at least one sentence which is placed immediately before or after it in the text. Figure 1 displays the worksheet that provides learners with the structure of this task.

Draw your own figure here. Include an appropriate caption for your figure.

Figure 1: _____

Write one sentence that anchors your figure in the text. Start your sentence with:
Figure 1 shows _____
_____

Fig. 1. Worksheet for writing figure captions

In pairs, they then read and comment on each other's figures, captions, and sentences, identifying room for improvement. In a final step, the whole group lists features of effective figures, tables, and captions for scientific writing together with the teacher. This first session serves the purpose of introducing learners to the importance of referencing in writing by focusing on figures and tables as multimodal and concise components of technical reports and theses.

3. Referencing Rules and Following a Style Sheet

In a second session, students are introduced to concrete referencing rules and the style sheet of the American Institute of Aeronautics and Astronautics (AIAA), which has been adapted by the department's faculty as a guideline for its own writing template. The most current version of the AIAA style sheet can be found under [1].
The session starts with a definition of plagiarism and the presentation of acceptable and unacceptable paraphrases. Students read a short extract from [2, p. 23] on air transport economics, which is related to their field of studies. Then they compare the original text with an unacceptable and an acceptable paraphrase and discuss the differences with the whole group and the teacher. Furthermore, the teacher presents examples of various quotation types and their format and in-text treatment, such as direct quotations shorter than three lines in double quotation marks, longer direct quotations indented from the left margin, and indirect quotations in the form of short paraphrases or summaries.
The sequence also includes common phrases for introducing quotations, which should serve as models for students to copy or adapt in their own writing. Tables 1 and 2 show these signal phrases for in-text referencing.

Table 1. Reasons and signal phrases for using quotations in writing distributed to students

Reasons for quotations	**Phrases**
Supporting the writer's point of view	*As AuthorLastName (YEAR) has shown, … (p.n.).*
Comparing several viewpoints	*AuthorLastName (YEAR) uses a similar approach (p.n.).*
Providing an example	*One consequence is, for example, … (AuthorLastName, YEAR, p.n.).*

Introducing a point or an argument	*According to AuthorLastName (YEAR), "…" (p.n.).*
Reviewing the literature in a field	*Recent research focuses on … . As AuthorLastName (YEAR) has found, … (p.n.).*
Concluding an analysis or a discussion	*Thus, AuthorLastName (YEAR) concludes by … (p.n.).*
Explaining data and the like	*AuthorLastName (YEAR) offers a convincing explanation: "…" (p.n.).*

Table 2. Further phrases for using quotations in writing distributed to students

Phrases for introducing quotations in writing
As AuthorLastName (YEAR) underlined/observed/argued, … (p.n.).
For example, AuthorLastName (YEAR) suggests that … (p.n.).
AuthorLastName (YEAR) notes/mentions that … (p.n.).
This method is widely recognised (AuthorLastName, YEAR, p.n.).
Recent research indicates that … (AuthorLastName, YEAR, p.n.).
These results are supported by AuthorLastName (YEAR, p.n.).

The teacher explains that indirect quotations are phrases and sentences paraphrased from texts written by other authors. It is emphasised that, in their texts, students need to preserve the meaning and content of the original thoughts but summarise them in their own words and sentence structure, so that their paraphrase is clearly linguistically distinct from the original source. Furthermore, learners need to add the correct in-text reference immediately after the quoted part in their sentence. The teacher also stresses that indirect quotations must not be longer than a single full sentence in each case to clearly mark the beginning and ending of the quotation and to distinguish it from students' own original writing.

4. In-Text Referencing Practice

After having explained the basic rules of referencing, the teacher asks learners to conduct an in-class referencing task. Students work with a short extract from the book by Vasigh et al. [2, pp. 19–20] on world air traffic growth. Before learners start paraphrasing information from this book, they write a short text on the topic themselves, without consulting any additional sources. They are asked to introduce each paraphrased sentence with a signal phrase containing the author's last name and the year of publication. They further need to include the exact page number from which they have paraphrased the sentence either right after the year of publication or at the end of the paraphrased sentence in brackets, depending on which option better serves the accuracy of the in-text reference and their own sentence construction. They are supposed to integrate at least three paraphrased sentences with the corresponding in-text references into their own original writing about world air traffic growth. Overall, their text should consist of at least four to five original sentences and three paraphrased sentences forming a coherent and fluent paragraph. Students are given time in class to complete this task individually, compare their texts, and ask questions for clarification.

5. Composing a List of References

At the end of the session, the focus shifts to the list of references. The group is informed that, in addition to in-text references, a list of references at the end of a text is required to provide a professional and complete documentation of the literature quoted. The teacher underscores that each entry in the references list must have been quoted at least once in the text and that each in-text quotation and reference must have at least one corresponding full bibliographical entry. In the end, the main purpose of such rigorous documentation is the reader's ability to identify and access each of the sources used. In other words, a reader must be able to find the original literature and source material students have quoted based on the information provided in the references list. The teacher reminds learners that it is their responsibility as authors to supply accurate and state-of-the-art bibliographical data according to a consistent style sheet.

For homework, learners are expected to study the style sheet used for the course and create a list of references linked to raw bibliographical data for individual entries. They are supposed to order the

entries alphabetically by authors' last names. In the subsequent session, they need to have their list of references ready for comparison. During that unit, learners can compare their lists with the teacher's model, clarify misunderstandings, and correct mistakes.

6. Written Assignment and Corrections

In a written assignment, students demonstrate that they have grasped the concept of referencing. They need to write a brief technical commentary on the effects of generative artificial intelligence (GAI) on the aviation industry. They are asked to identify three areas of aviation where GAI may lead to or has already led to revolutionary developments and changes. The text is characterised as a simulated commentary for a scientific magazine written by an expert in aeronautics. The main objectives of this assignment are practising literature search and integrating relevant source materials as references in students' commentaries. Prior to the task, learners are given a model text on an aeronautical topic that integrates references from three different sources, so that they have a clear example of professional academic writing for guidance.
After grading, students receive feedback on their assignments in the form of teacher corrections and comments. They can ask questions on suggested improvements, deviations from referencing standards, and the grading of their texts.

7. Consolidation of Referencing Skills

There is a consolidation session on referencing skills where students are asked to synthesise information from three sources in a text they compose on fatigue in aircraft structures [3, 4, 5]. The topic mirrors the group's aeronautical context to maintain their interest in the linguistic and referencing aspects involved. This task has been adapted from [6, pp. 89–90], aims at strengthening learners' referencing skills, and encourages them to critically reflect on their own writing and source integration. This consolidation unit takes place after students have received feedback on their written assignments, so that they may implement prior corrections and comments for current improvement.

8. Applications and Transfer of Referencing Skills

Immediate applications of referencing skills for students in this degree program concern assignments in English language classes, presentations of projects in front of the program's faculty, project reports, and their final graduation thesis and presentation. This transfer of skills thus affects other courses in the program, the graduation phase, and, after graduation, work- or study-related writing tasks. The mechanical aspects of referencing skills are even independent of English and may be transferred to writing tasks in other languages.

9. Ethics beyond Referencing

Ethics in professional academic work extend beyond mere referencing skills but include issues of copyright, ghostwriting, conflicts of interest, research design, the research process, and, in recent years, the use of GAI tools. These areas have not been the focus of this paper, yet particularly questions surrounding GAI in teaching, research, and learning may be addressed in English language classes, as this technology will increasingly affect academic life in the future. As a first step, English language teachers could give advice to students on how to use GAI tools and mark some limitations of their applications as well [7].

10. Conclusions

Teaching referencing skills to undergraduate students is a central aspect of tertiary English language courses, as the accurate handling of source material and literature forms part of every academic profession's set of requirements. The sequence of lessons presented here is aimed at equipping aeronautical engineering students with the skills necessary to avoid plagiarism, protect their own academic integrity, produce precise in-text references with the corresponding bibliography, and follow an appropriate style sheet. Despite its origin in an ESP course in engineering, it may be transferred to other academic disciplines by tailoring the examples, literature, and style sheet to the target group of learners. The worksheet, phrases, and activities for students are generic and thus lend themselves to English language courses in global tertiary settings. Teaching referencing skills is also an area at the

intersection of ESP and content classes, which may profit from learners' competences in handling professional literature for advanced writing tasks such as project reports and graduation theses.

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