Magdolna Pálinkás[1]– Viktória Sirokmány[1] – Gábor Gyenes[1] – Attila Gátos[2] – Katalin Fogarasi[1]

[1]Semmelweis University, Department of Languages for Specific Purposes
[2]Department of Traumatology and Hand Surgery, University of Pécs

A comparative analysis of specific English language proficiency in mediation skills in instructed and non-instructed medical students

In 2019, a compulsory English for Specific Purposes (ESP) language examination was introduced for medical students at Semmelweis University, Budapest, with optional preparation courses. Both the examination and the optional preparation courses were adapted from the Common European Framework of Reference for Languages (CEFR) guidelines to help medical students become independent users of English in clinical practice. After consulting clinicians, we chose clinical handover as a written mediation task, the latter also serving as a basis for this paper, in which we present a comparative analysis of students' language proficiency. While preparing students for handover, we identified lexico-grammatical units in authentic English-language clinical teaching scenarios in material developed in cooperation with a clinician, using the SBAR system. Solutions of the written mediation tasks by 66 examinees (divided into two groups: instructed and non-instructed group) were digitalized and analyzed using the Sketch Engine software. After investigating the most frequently used language patterns and the percentage of their correct use, we found a significant difference between the two groups. In the instructed group, 80.14% of the patterns included in the course material were used correctly. In the non-instructed group, a higher ratio of non-instructed students either used none of the identified patterns or used them incorrectly. We concluded that self-study ESP material should be made available for students, even at high levels of general English, who are unable to attend the courses.

Keywords: *clinical handover, concordance analysis, ESP phrases, terminology, mediation*

Introduction

In 2019, a compulsory B1 Common European Framework of References (CEFR) level English and German language examination was introduced at Semmelweis University, Budapest, (SE) for students of the Faculties of Medicine, Dentistry and Pharmacy, and was developed by the Department of Languages for Specific Purposes. SE Students are also offered free optional preparation courses which are based on Content and Language Integrated Learning (CLIL) elements. The current study focuses on medical students and their results in the *University Elementary Examination in English for Medical Purposes (UEE).* The examination consists of seven tasks testing four language skills: reading, listening, speaking, and writing. The written task is one of text mediation, i.e. translating a written text, and serves as a basis for this paper, in which we present a comparative analysis of language proficiency in students who attended optional preparation courses and those who did not. With the help of corpus linguistics tools and techniques we were able to uncover and highlight regularities in discourse, collocations, and specialist terminology. Small ESP corpora are especially suited to this task (Boulton, 2012).

Handover as a Mediation Task

"Clinical handover (clinical handoff in North America) refers to the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis" (Australian Medical Association, 2006:7). Handover is arguably one of the most frequent and important oral or written communication methods between clinicians in the delivery of patient

care (Eggins–Slade, 2015). As a mediation task, students are given a clinical handover in Hungarian, and they have to translate it into the English-language equivalent.

Given the importance of clinical handover, we decided to analyze the mediation part of the examination from a functional and terminological aspect. The genre of clinical handover exists in both oral and written forms and is considered a separate genre in the American business system according to the definition of genre defined by Swales (1990) and Bhatia (1993), with distinctive features. Tasks including handovers also feature in the oral examination in the form of doctor–physician communication, but in seeking an authentic genre to use for the mediation task, we found the written form to be most suitable (Eggins–Slade 2015).

Meanwhile, the 2001 CEFR describes *mediating a text* as passing on the content of a text to another person who does not have access to the information, often because of linguistic, cultural, semantic, or technical barriers. *"Mediating concepts refers to the process of facilitating access to knowledge and concepts for others, particularly."* (CEFR, 2020:91) "Mediation language activities, (re)processing an existing text, occupy an important place in the normal linguistic functioning of our societies." (CEFR, 2020:14)

The UEE at Semmelweis University is at the B1 level, at which students are expected to *"convey information given in clear, well-structured informational texts on subjects that are familiar or of personal or current interest, [even if] lexical limitations cause difficulty with formulation at times"* (CEFR, 2020:91). The mediation task in the elementary examination requires students to relay a clinical handover built upon the SBAR (Situation, Background, Assessment, Recommendations) system (NHS, 2020), a communication tool that can be used verbally or in writing to provide essential information concisely, such that it can even replace an executive summary in a formal report (Ernst, 2022).

Preparation courses for the examination

The elementary examination tests all four skills – reading, listening, writing, and speaking – focusing on a wide range of medical fields with special emphasis on the physician–specialist, doctor–patient communication. For the written part of the examination, an authentic genre is used, with the written form of handover included as a mediation task.

It is important that students are taught authentic specific language because medical genres are particularly conventionalized (Kühtz, 2007) in their use of language (Halász–Fogarasi, 2018; Varga et al., 2022), especially regarding discourse-specific word patterns, or *lexico-grammatical* patterns (Gledhill, 2011:14). For this purpose, 15 authentic sample handovers (Ballantyne, 2017) were collected to form part of the curriculum, allowing students to observe and acquire authentic, genre-specific collocational patterns (NHS 2022).

In each structural unit of the handovers based on the SBAR-system, key sentences were established which were most typical of the respective section and contained the most important terms for helping the addressee gain information essential to differential-diagnostically relevant information. These sentences usually include a verbal phrase and at least one noun phrase essential for medical decision making. The physician reading the handover is aware of the function of the separate sections and looks for the key terms and phrases enabling him or her to skim-read the report.

These patterns can also be considered as technical language phrases (Gréciano, 2006), but at B1 CEFR language level, the written genre is set only at a *professional colloquial level,* not at the highly terminologized *scientific level* (Fogarasi, 2012-14) such as a clinical report. Nevertheless, students are expected to use authentic patterns in their English professional discourse, and SE as a research and elite university expects all students to be authentic in English-language documentation. Accordingly, while students have a high level of proficiency

in general English, they are offered the opportunity to acquire the more specialized, genre-specific patterns highlighted, through the ESP courses offered at our department.

As the elementary examination preparation course is elective, it is possible to compare the genre-specific proficiency of those students who have taken the course against those who have not, and thus establish the relevance and effectiveness of our elective preparation courses. The present study investigated the extent to which students know and use the technical terms and aforementioned lexico-grammatical patterns correctly, i.e., students' ability to use the relevant intercultural and genre-specific linguistic skills to integrate effectively into the English-language discourse community.

All the students attending the examination were at a high level of general English language proficiency. Accordingly, relatively few general linguistic errors were expected. Similarly, no significant difference was expected in terms of grammatical mistakes between those who participated in preparation courses and those who did not, because grammar was not the main focus of the courses. The difficulty level of the mediation text did not exceed students' knowledge of the general language; therefore, the expectation was that non-instructed students would substitute the designated lexico-grammatical patterns for general-English equivalents, while instructed students would use the patterns more frequently and proficiently. The primary aim of our study was to assess the relevance of our courses by comparing instructed and non-instructed students' proficiency; the secondary aim was to assess the extent to which instructed students retained knowledge gained in the course and used that knowledge in the mediation task.

Methods

Participants

Participants were SE university students taking the ESP examination in the summer and winter examination terms of 2022. They all held certificates proving that their general English language level was at B2 or C1, according to CEFR. Based on participation in the examination preparation course, two groups were formed: participating students (N=27, 40.9%) and non-instructed students (N=39, 59.1%),

Tools

IBM SPSS (version 22) statistical software was used to conduct the participating/non-participating group analysis. Quantitative analysis of the 66 test corpuses was performed using the Sketch Engine corpus analysis software tool. Lexico-grammatical units were identified in authentic English-language clinical teaching materials and used to prepare students for handover scenarios developed in cooperation with a clinician, using the SBAR system. The phrases were digitalized and analyzed using the Sketch Engine software.

Responses to the written mediation tasks were collected from 66 examinees, 27 of whom attended the preparation course during the winter semester of the academic year of 2021/22. The mediation task in the B1 CEFR level elementary examination required students to transfer a Hungarian clinical handover into English. The handover was based upon the standardized communication scheme known as the SBAR. During the examination, participants were allowed to use paper-based general-English dictionaries (i.e., not a medical dictionary).

We identified the most frequently used language patterns in the students' responses to the task, and the percentage they were applied correctly, comparing the instructed and the non-instructed groups.

Results

Analysis of genre-specific collocations or lexico-grammatical patterns

There were no differences in the students' responses concerning structuring, which was to be expected given that the SBAR has a set structure, which is also followed by the source language (Hungarian). Qualitative and quantitative analyses of the students' responses showed the most frequently used language patterns both in the instructed and the non-instructed groups.

Table 1 summarizes the specific lexico-grammatical patterns used in original, authentic English-language handovers given as correct responses by the instructed students, and the inappropriate responses of the non-instructed students who applied non-standard expressions. In the S section, passive voice is typical, and most students used it, though the verb choices were not the most appropriate. In section B, the lexico-grammatical pattern in English is a nominal phrase containing an adjective, *spasmodic cough*, for which a verbal structure, *görcsösen köhögött*, is given in Hungarian. Most students used the grammatically correct structure, though some used inappropriate verbs. In the Assessment part, several students' solutions imbedded the genre-specific term, *stridor*, in lay language expressions, e.g., *stridor voice*. In the last section (the Recommendation section), where the addressee might be the patient, everyday English can be applied to express therapeutic instructions. Yet, students did not seem to have recognized that the intransitive use of verbs would be more appropriate, and consequently, their responses were often too basic and informal, e.g., *to end the fever*. The subordinate clause also caused some difficulties, e.g., *until he doesn't have a fever any more*.

Table 1. Lexico-grammatical patterns

	Hungarian pattern	expected genre specific pattern	examples for non- standard patterns
S situation	*Tegnap délelőtt egy hároméves kisfiút **vettek fel** az osztályra.*	*... was admitted to ...*	*... was accepted at ...* *was taken up to the department* *checked in with his parents*
B background	*Erősen és **görcsösen köhögött**.*	*spasmodic cough*	*spastic cough* *crampy cough*
A assessment	*A **belégzéskor sípoló hang** (stridor) hallható.*	*During inhalation a stridor, a whistle-like sound ...*	*... stridor voice* *during breathing in* *The whistle during inhaling ...* *... stridor while respiration*
R recommendation	*Lázcsillapítót kell kapnia a **láz megszűnéséig**.*	*until his fever reduces*	*until the fever eases* *to end the fever* *until he doesn't have a fever any more*

Through analysis, the students' mistakes were grouped into two main categories: terminological mistakes and errors in language use (see Table 2). Within each category, five further subcategories were identified. Terminological mistakes included wrong register, inappropriate meaning, inappropriate use, circumscribed meaning, wrong part of speech and neologism, and errors in connection with relative pronouns, prepositions, punctuation, spelling, word order and verb tense, which were identified as errors in language use.

By *register*, this study refers to the use of terms and lexico-grammatical patterns relevant in this genre and appropriate in doctor–specialist communication. In the *meaning* category, the words or expressions are either synonyms or similar in pronunciation to the required word. All the solutions that lack appropriacy were put into a separate category. Although students were allowed to use a paper-based bilingual dictionary, in many cases, they

chose circumscribing, e.g., *fever sinking* instead of *antipyretics*. Many errors were observed in connection with parts of speech and neologisms. Students freely formed the words following the analogy of other words they had learnt earlier, no matter how unfamiliar the new word forms were to them. Some mistakes could belong to more than one category, e.g., *hard-hardly* which could be put into both *part of speech* and *meaning* category, but for the purposes of this study we rendered them to only one.

Table 2. Types of mistakes

terminological mistakes		errors in language use	
type	intended meaning → solution	type	example
wrong register	admitted → *was taken* (lay term)	relative pronoun	*the boy which*
meaning	gasping → *suffocating* suspect → *expect*	preposition	*arrived on*
inappropriate use	spasmodic → *spastic*	punctuation	*3 year old boy*
circumscribed meaning	antipyretics → *fever sinking*	spelling	*accute/acut*
part of speech	hard → *hardly*	word order	*usually it appears*
neologisms	spasmodic → *spasmic/crumpedly*	tense	*had arrived yesterday*

The collocations of *fever* are illustrated in Figure 1 using the visualization function of the Sketch Engine software. The size of each bubble indicates the frequency of the individual collocations in the sub-corpus, and their distance from the center indicates the typicality of the co-occurrence of the words in the text.

In general, it can be observed that the non-instructed group used a wider range of collocation-like phrases, many of which did not correspond with the standardized patterns, e.g., *fever subsides*, *fever proves* (see Table 2). However, in the instructed group, only three verbs with the word *fever* as an object were used: *go*, *decrease*, and *end*. Errors were observed in both groups, but the students from the instructed group were found to be more familiar with the professional lexico-grammatical patterns: 80.14% of the lexico-grammatical patterns were used correctly by the instructed students, whereas only 63.21% of the patterns were applied appropriately by the non-instructed group.

Figure 1. Collocations with the word *fever*
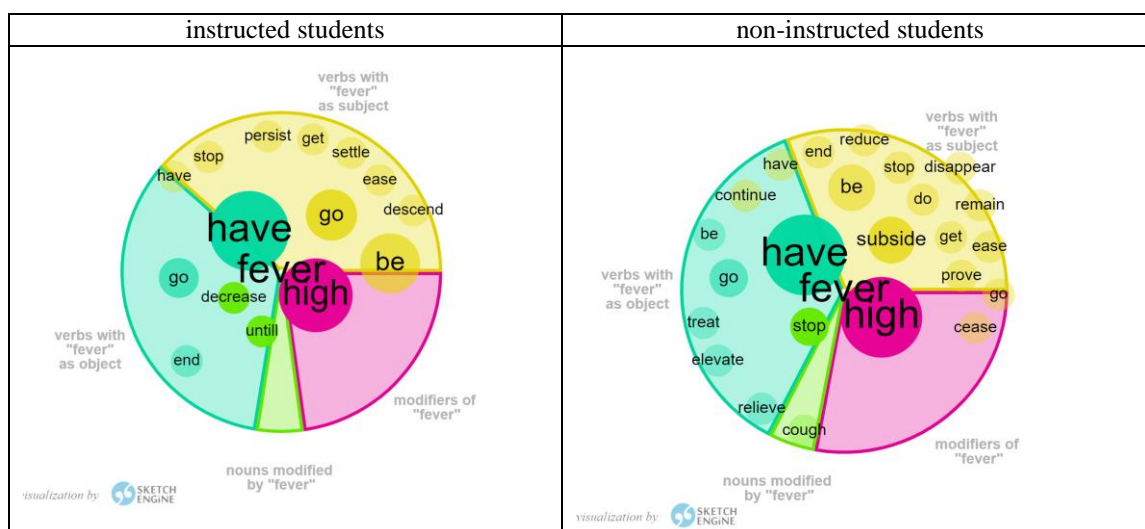
Statistical analysis

Of those students taking the examination, two groups were distinguished: participating (or instructed) students (N=27, 40.9%) and non-participating (or non-instructed) students (N=39, 59.1%). There were no participants with missing data; therefore, all the students were included in the analysis.

The results showed normal distribution, the assumptions of the statistical analysis were fulfilled, and an independent sample t-test was carried out to investigate the association in overall, terminological, and other mistake counts between the two groups. The IBM SPSS (version 22) statistical software was used to conduct the analysis and differences were considered significant if $p<0.05$.

The results of the statistical analysis are shown in *Table 3*. Instructed students (M=4.81, SD=1.96) compared to non-instructed students (M=6.82, SD=2.95) demonstrated significantly lower scores in overall mistake count (p=0.003). Moreover, in terminological mistake count, participating students (M=3.78, SD=1.63) – in comparison to non-participating students (M=5.15, SD=2.17) – showed significantly lower scores (p=0.007). No significant differences were detected in other mistake scores.

Table 3. Number of mistakes

	Overall mistakes		Terminological mistakes		Other mistakes	
Participated?	Yes	No	Yes	No	Yes	No
Mean	4.81	6.82	3.78	5.15	1.04	1.67
SD	1.96	2.95	1.63	2.17	1.16	1.74
Statistical test	t(64)=3.091, p=0.003		t(64)=2.794, p=0.007		t(64)=1.645, p=0.105	

Discussion

Based on the results of our case study, it is clear that the students who had attended the examination preparation course were more likely to use the genre-specific terms and lexico-grammatical patterns correctly; that is, the way they had observed them in the authentic handovers presented in the preparation course. These instructed students demonstrated proficiency with an array of adjectives or verbs, adhering to the standard patterns that they had acquired and practiced during the course. In contrast, students who had not attended the examination preparation course were less able or unable to perform the mediation task in a genre-specific and authentic way.

The task of creating and using medical documentation is often missing from the curricula of medical training, and documentation skills are only acquired on the ward in clinical practice (Bechmann, 2017). Instructors at SE consider it important that students receive instruction in documentation skills in their medical English classes, to ensure they are able to write a clinical handover in an English-speaking environment or for an English patient.

Based on the statistical analysis, we can state that significantly (p=0.007) more lexico-grammatical patterns were used correctly by the instructed students than the non-instructed students. These results confirm our expectations that, instructed students would show a higher level of professional language skills, typical of the genre of handover. This is true even though significant differences were not observed in general language use and grammar between the instructed and non-instructed groups. Although the general language skills of Semmelweis University students are usually high as most of them possess a general language examination certificate at at least B2 level, in our case study, still the instructed students, who had been taught the genre-specific terms and patterns, also made significantly fewer mistakes (p= 0.003) in the use of general English.

Conclusion

Based on the results of our case study, it can be concluded that the genre of clinical handover is suitable for measuring the professional language skills of medical students' study. The handover genre features numerous lexico-grammatical patterns that are highly characteristic of each structural unit; accordingly, their correct and authentic use can be accurately established and used to effectively assess genre-specific knowledge. Furthermore, the results of our qualitative and quantitative analyses demonstrate that participation in a preparation course featuring authentic sources and targeted exercises contributes to a more professional mediation of the genre of written clinical handover, to an extent that is statistically significant.

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