ORIGINAL ARTICLE

THE FEASIBILITY OF CONVERSATION ANALYSIS TOOL IN THE FORMATIVE ASSESSMENT OF MEDICAL AND DENTAL STUDENTS' ACHIEVEMENTS IN ENGLISH FOR SPECIFIC PURPOSES

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ABSTRACT

The aim of this research is to demonstrate the feasibility of the Conversation Analysis Tool as an effective method of formative assessment in the context of teaching the University course of English for Specific Purposes (Medicine and Dentistry) through the implementation of elaborated and well-targeted classroom assignments and activities.

Materials and methods: The paper describes the experience of applying the Conversation Analysis Tool, developed by Kenji Hakuta et al. (Stanford University Graduate School of Education). The study relied on the analysis of the transcribed classroom conversations between students in terms of different communicative dimensions.

Results: Activities 1-2 focused on developing the skill of clarifying ideas in 2nd-year medical students who studied the topics "Allergy" and "Sensory Organs". Activities 3-4 scaffolded the skills of negotiating and fortifying ideas in 1st-year dental students while they mastered the topics "Tooth Extraction" and "Dental Filings". The authors used such scaffolding means as the Conversation Skills Poster with starter-finisher phrases, sentence frames, strategic pairings, and visuals (graphic organizers, charts). Along with a number of prompts, the fishbowl method, modeling situations, and different moves were applied depending on the situation and the material discussed.

Conclusions: The Conversation Analysis Tool proved to be an effective method of formative assessment in the context of teaching the University course of English for Specific Purposes (Medicine and Dentistry). This technique discloses students' level of understanding of the learning material, reveals the potential gaps in mastering the academic subject and allows the teacher to react timely and appropriately to eliminate them. This research will be useful for ESOL teachers at medical universities, as well as for educators from other academic settings, in the process of formative assessment and organizing classroom activities.

KEY WORDS: Conversation Analysis Tool, constructive conversation, communication skills, formative assessment, English for Specific Purposes

INTRODUCTION

Medicine and dentistry are professions, inherently active in terms of communication and spoken interaction. Indeed, doctors and dentists quite often need to be able to elicit information from their case histories, persuade their patients to follow a certain treatment regimen, and participate in concilia and discussions, and if necessary, defend one's point of view in disputes [1]. Hence, developing speaking skills is essential in the ESP setting, and thereby this research is relevant. Conversation analysis (CA) is a modern technology, which discloses the framework and thus reveals the nature of human communication [2]. Currently, it has become commonly used as a research methodology into the acquisition of foreign languages [3; 4; 5; 6], teaching medical disciplines to English-speaking international students [7], studies in world literature [8], sociology, psychology and other humanities [9; 10], as well as insights into doctor-patient communication [11; 12]. However, although the effectiveness of this methodology in second language teaching is generally recognized [5], its application as a formative assessment technique in medical education has not been within the focus of research so far.

Therefore, this research aims to demonstrate the feasibility of CA as a method of formative assessment in the context of teaching the University course of English for Specific Purposes (Medicine and Dentistry).

THE AIM

The aim of this research is to demonstrate the feasibility of the Conversation Analysis Tool as an effective method of formative assessment in the context of teaching the University course of English for Specific Purposes (Medicine and Dentistry) through the implementation of elaborated and well-targeted classroom assignments and activities.

MATERIALS AND METHODS

The study relied on the analysis of the transcribed classroom conversations between students in terms of different communicative dimensions. We will describe our experience of applying the Conversation Analysis Tool (CAT) suggested in the online course for ESOL teachers "Constructive Classroom Conversations: Mastering Language

for College and Career Readiness" (Stanford University Graduate School of Education) [13] at a medical university of Ukraine. The CAT was designed for developing the four conversation skills (creating, *clarifying*, *negotiating*, and *fortifying* ideas) [13]. The skill of *creating* ideas is relevant primarily for elementary school students [3]. Meanwhile, the other three skills are highly important for future doctors and dentists, and thus require careful consideration in the classroom setting at a medical university. The CAT involves the formative assessment of students' classroom conversations in several communicative dimensions [13]. Dimension 1 focuses on whether conversational turns "build on" (students should connect to previous turns in conversation) and "build up" (students should form or strengthen ideas based on partner's turns) to develop an idea or ideas [2, p. 37]. Accordingly, when deciding what score a certain conversation excerpt should receive in terms of Dimension 1, the teacher uses the four-point scale, depending on the number of relevant conversational turns, which effectively build-up on previous turns to develop a complete and clear idea: "Strong Evidence"; "Inconsistent Evidence"; "Attempting Interaction"; "No Attempt" [13]. Dimension 2 displays how well the conversation fosters learning by focusing on the lesson's objective (eliciting ideas and concepts, which teachers want students to learn) [2, p. 37]. When deciding what score a certain conversation excerpt should receive in terms of Dimension 2, the teacher also uses the four-point scale, depending on the number of relevant conversational turns, which effectively follow the intended learning and develop deep comprehension of the lesson's objective: "Strong Evidence"; "Inconsistent Evidence"; "Attempting Interaction"; "No Attempt" [13].

RESULTS
Activity 1 focused on developing the skill of clarifying ideas in 2nd-year medical students who studied the topic "Allergy". Students read several texts on allergy and were asked to discuss its causes, symptoms, and prevalence. Students were supposed to elicit information from the corpus of medical texts as suggested by the curriculum, and based on this information develop an understanding of allergy as one of the most urgent and relevant healthcare problems of the modern world. In particular, one of the pieces from the required reading was an excerpt from "A European Declaration on Immunotherapy" [14] designed by the European Academy of Allergy and Clinical Immunology (EAACI). The learning objective of the lesson was for students to understand the broader scope of allergy, to realize that "allergy today is a public health concern of pandemic proportions, affecting more than 150 million people in Europe alone" [14 p. 1]. In other words, students were expected to be able to provide evidence that allergy is detrimental not only for individual patients but for society in general.

To trigger the act of communication, our prompt was: "Why is allergy a serious public health problem?" The classroom conversations demonstrated how students gradually developed their understanding of the problem discussed. In general, the discourse displayed a considerable level of mastering medical terminology on the topic "Allergy". In the course of the conversation, the students managed to develop and complement each other's thoughts and statements. In terms of Dimension 1, the formative assessment level was "Strong Evidence": most of the turns built on previous ideas. For instance, turn 2 ("the symptoms of the respiratory tract such as runny nose, cough, and sneezes") logically complements turn 1 ("…allergy is a serious public problem because it can have a lot of unpleasant symptoms, like rash, hives and itching"). Further, turns 2, 3, and 4 elaborate each other quite effectively ("… so many different symptoms are due to numerous sources of allergens. <…> allergy-causing agents can be present anywhere – in medications, foods, plants, insect venom, animal dander, in molds and even in house dust" – "Maybe that's why allergy is so common") – the students provided a clear association between such basic medical categories as "symptom" – "cause (allergen)" – "incidence". In terms of Dimension 2, the formative assessment level was "Strong Evidence" as well: more than half of turns effectively focus on the lesson's objective: turn 4 effectively triggers conversation in the correct direction ("Maybe that's why allergy is so common"). Turns 8, 9, 10 support the learning objective as well (e.g., "…allergic patients are sick during all their lives, and they must take more sick leaves, <…> leads to lower work results"). Turn 9 switches to the topic of the family a little unexpectedly ("Families also suffer from allergy manifestations, for example, when patient's symptoms become worse at night, all family members can have disturbed sleep"), but as long as Dimension 2 is concerned, it still serves the lesson's objective. Turn 11 is the key statement that reflects the lesson's objective most vividly ("…allergy is a far more serious problem than it may seem at first"). In general, it can be concluded that our instructions and prompt were adequately grasped. We were delighted to hear such words as "sick leave" since this is a lexical unit from the students' first year of study (the topic "Hospital"), thus the prior learning material has been effectively refreshed.

In Activity 2, we continued developing the skill of clarifying ideas in 2nd-year medical students who studied the topic "Sensory Organs". We decided to foster the clarifying skill through developing the Conversation Skills Poster, appropriate for our class. In particular, for developing this skill, we used the following prompt starters: "Can you be more specific?"; "What does that mean?"; "What do you mean by....?"; "Can you elaborate on the…?"; "Can you clarify the part about…?"; "How is that important?"; "I understand the part about…, but I want to know…", and response models: "In other words,…"; "To paraphrase what you just said, you mean…"; "In other words, you are saying that…"; "A different way to say it…"; "More specifically, it is … because…". At this stage, students were already well-acquainted with the activity of paired conversation. Modeling and scaffolding were pre-planned before the class. At home, students watched a series of educational movies (short sequences, with a duration of 4-5 minutes),

devoted to each sensory organ. Then each student obtained the reading materials on one of the sensory organs. Thus, each student was expected to become an expert on ONE sensory organ. During the final stage of the lesson, students were asked to discuss this material in pairs. We suggested the following prompt: "Which sensory organ is the most important? Explain why". We also introduced the following modeling situation: "If you could invent only ONE medication to cure disorders of ONE sensory organ – which one would you choose?" We expected to create the situation of an "information gap" in which all students would come up with notes on certain sensory organs. The expected outcome was that conversations between students would provide the effect of genuine information sharing. The lesson's objective was that students would share their knowledge with peers and thus understand the importance of sensory organs for human beings.

In terms of Dimension 1, the formative assessment level was "Strong Evidence": most of the turns built on previous ideas. In the course of the conversation, students managed to develop and complement each other's thoughts and statements. This conversation, therefore, received a "4". In terms of Dimension 2, the formative assessment level was "Inconsistent Evidence" – half or more of the conversational turns built on previous turns to adequately build up an idea, which was incomplete. We expected to hear some important pieces of learning material, which were not discussed. Hence, this is a signal that clarifying skill still needs to be improved. This conversation, therefore, received a "3".

Activity 3 scaffolded the skill of negotiating ideas in 1st-year dental students while they mastered the topic "Tooth Extraction". At first, we decided to focus on the skill of negotiating ideas, that is, on the ability to evaluate and compare ideas that are indispensable for the development of critical thinking in young professionals. Future doctors need to be able to choose the most appropriate method of diagnostics or treatment and evaluate it in the context of other available options. The task which we suggested to students to develop the skill of negotiating ideas was to describe the advantages and disadvantages of certain treatment methods in terms of different criteria, such as patient's demands, preferences, and life quality, cost, duration, sustainability, and durability, etc. In particular, 1st-year dental students were asked to compare different types of fillings – each student had to choose one type, describe its benefits and drawbacks by several criteria, as mentioned above. Then they worked in pairs and discussed their preferred choices, comparing and contrasting them (e.g., silver amalgam fillings vs. tooth-collared composite fillings). Next, we applied the fishbowl model. We chose 4 students who previously had the most constructive conversations in pairs to form a "fishbowl" and further negotiate their ideas in front of fellow students. We used the following prompt starters: "What is your opinion? Why?"; "What are the advantages/disadvantages of ...?"; "Which has the heaviest/ strongest evidence?"; "How does the evidence for your argument compare to mine?", and

response starters: "Even though it seems that …"; "That is a valid point, but…"; "I think the negatives of… outweigh the positives of …" and the like.

After the "fishbowl" group had some discussion and other students contributed their feedback, we tried to scaffold this skill by suggesting them several models of patients (e.g., a young well-to-do man who is allergic to metal amalgams), and students had to adjust their evaluations to these specific situations – some of their previous comparisons became irrelevant, while other strengths and weaknesses of the discussed options became pertinent. We can conclude that most students did not have particular difficulties with negotiating skills: they managed to critically evaluate and compare the discussed material in terms of the advantages and disadvantages of dental fillings. Since the skill of negotiating ideas did not seem to be a challenge for students, next time we decided to concentrate on the skill of fortifying one's point of view. We focused on this skill because providing robust support for one's ideas is a crucial prerequisite of success in a future career. While working on Activity 1, we noticed that our students do not sufficiently demonstrate this skill: sometimes they tend to agree with peers too easily or fail to provide the evidence persuasive enough. The skill of fortifying ideas can be effectively developed through looking for strong evidence and examples in medical texts, which are studied throughout the course.

In Activity 4, we also worked with 1st-year dental students, and the topic was "Tooth extraction". The objectives of the lesson were: to prepare students for their professional life, to foster their career readiness and self-awareness as future dentists. We expected that students would learn to substantiate and support their opinion as to the procedure of tooth extraction. Most of the conversations occurred during the second half of the lesson. Before that, we studied several medical texts on tooth extraction and wisdom teeth. We grouped students in pairs (according to their level of English language proficiency – to achieve a constructive dialogue). Our prompt was: "In which cases is it necessary to extract wisdom teeth? Provide pros and cons for such a procedure". After each pair of students had enough time to discuss their viewpoints, we tried to scaffold this skill by suggesting several models of patients (e.g., an elderly diabetic patient who needs a denture but has an impacted wisdom tooth, etc.). Besides, we provided students with relevant response starters using the Constructive Conversation Skills Poster. We used the following prompt starters: "What are examples from other texts?"; "Can you give an example from your life?"; "What is the strongest support for…?"; "How does it support the idea?", and response models: "One case that illustrates this is…"; "For example, …"; "In the text, it is said that …"; "The text states that…"; "An example from my life is …". Each model situation which we suggested to scaffold the skill (e.g., a young man with carious cavities in a wisdom tooth, or an elderly diabetic patient who needs a denture but has an impacted wisdom tooth, etc.) contained both indications and contra-indications to extraction. We expected that students would

adjust their positions to this particular situation, use examples from texts to support their point of view, and thus learn to fortify their opinion. Most of the students demonstrated a satisfactory level of ability to fortify their point of view. Some of them were quite ready to argue and give evidence, once a model patient was suggested. Some of the less advanced students, however, were slightly confused by our scaffolding attempt. Therefore, another means of helping these students to develop this skill will be needed. The selected reading materials promoted the constructive course of conversations (students provided pertinent evidence from medical texts). To advocate their viewpoint, students widely used citations from their readings (e.g., "dentists assert that it's best to have wisdom teeth taken out between ages 16 and 22", "In one of our texts it is stated that in young adults the formation of the root is not complete, so there are fewer complications and risks", "According to Dr. Gregoire, the older you get, the higher the risk of nerve injury during wisdom tooth extraction is", "It is said that impacted wisdom teeth can undo the effects of braces, bridges, crowns, partial dentures, or any type of dental work", etc.). Students still need to develop this skill through learning to provide their examples. Due to their young age (the 1st year of study at a medical university), they certainly lack clinical practice and experience. Therefore, during this lesson, we did not hear any "real-life" examples. Hence, our next step was stimulating students to support their opinion based on their own experience. We decided that next time we would ask students to provide some examples from their lives (for example, some cases with their relatives or friends), to justify and support their opinion more substantially.

DISCUSSION

In Activities 1-3, we tried to foster the communicative skills of negotiating, fortifying and clarifying ideas. In general, the skills of negotiating and fortifying ideas are adequately developed. Meanwhile, the skill of clarifying ideas still needs improvement and therefore should be subsequently fostered. In terms of Dimension 1 (the ability to "build on" and "build up" ideas on the basis of partner's turns), we generally assessed the recorded excerpts as "Strong Evidence" (students demonstrated the ability to build a coherent conversation). In terms of Dimension 2 (the extent of students' understanding of the lesson's learning objective), conversations sometimes were scored as "Inconsistent Evidence" (some students need to put some effort into eliciting the learning material from the classroom activities). We used such scaffolding means as the Conversation Skills Poster with starter-finisher phrases, sentence frames, strategic pairings, and visuals (graphic organizers, charts). Along with several prompts, we applied the fishbowl model, modeling situations and different moves, depending on the situation and the material discussed.

In general, we suggest applying organized classroom conversations as a warm-up activity, to introduce and reinforce the relevant lexical material. For instance, while teaching the topic "Vitamins", we organized 1st-year medical students in pairs according to their level of English language proficiency. In other words, we deliberately did not pair advanced students with less achieving partners to avoid "lop-sided" conversations, when one student keeps asking short and uniform questions, and a partner provides extensive answers. We provided an individual prompt for each pair. For some students, the prompt "What are the benefits of vitamins and rational nutrition?" was quite sufficient, and they managed to build a constructive conversation. However, for other students, the prompt had to be more specific – for instance: "What are the benefits of vitamins and rational nutrition IN SPORTS?" or "What is the role of vitamins and rational nutrition DURING PREGNANCY?" With the help of a clear and specific prompt, all students coped with the suggested activity, and built reasonably coherent dialogues. Overall, the activity proves to be an effective means of formative assessment: it demonstrates students' general level of fluency, as well as their mastering of the studied topic.

CONCLUSIONS

Students' classroom conversations require careful pre-planning and elaboration. Modeling constructive classroom conversations is quite representative in terms of formative assessment. The Conversation Analysis Tool, developed by the Stanford Online teaching team, renders a feasible basis for teaching English at a medical university, and its potential requires further research in terms of English for Specific Purposes. Indeed, CAT works as a litmus test paper, which immediately gives the teacher an idea about students' level of understanding of the learning material. It reveals the potential gaps in mastering the academic subject and allows the teacher to react timely and appropriately to eliminate them. We believe that this research will be useful for ESOL teachers at medical universities, as well as for educators from other academic settings, in the process of formative assessment and organizing classroom activities.

REFERENCES

1. Lysanets Yu, Bieliaieva O, Znamenska I et al. Problem-oriented medical record as a challenge for narratological analysis. Georgian Medical News. 2018;10(283):180-183. PMID: 30516519.

2. Lysanets Yu, Protoven O. The role of conversation analysis tool in developing communication skills of medical ESL students. Topical Issues of Linguistics, Linguo-Didactics, Psychology and Pedagogy of Higher Education (Conference Proceedings, June 8-9, 2017, Poltava, Ukraine). 2017:150-152.

3. Havrylieva K, Lysanets Yu. Conversation analysis tool and its effectiveness in teaching medical English for professional purposes. Topical Issues of Linguistics, Linguo-Didactics, Psychology and Pedagogy of Higher Education (Conference Proceedings, June 8-9, 2017, Poltava, Ukraine). 2017:36-40.

4. Hall JK. The contributions of conversation analysis and interactional linguistics to a usage-based understanding of language: Expanding the transdisciplinary framework. The Modern Language Journal. 2019;103:80-94. doi:10.1111/modl.12535

5. Hidayat DN. Conversation analysis and its implications to language teaching. Tarbiya: Journal of Education in Muslim Society. 2019;6(2):197-209. doi:10.15408/tjems.v6i2.15138

6. Nanni A, Hooper D, Hale C. Conversation analysis in language teacher education: An approach for reflection through action research. Hacettepe University Journal of Education. 2018;33:54-71. doi:10.16986/HUJE.2018038796

7. Hryshko Yu. The use of group forms of training at pathophysiology classes with foreign students. World of Medicine and Biology. 2017;3(61):195-197. doi:10.26724/2079-8334-2017-3-61-195-197

8. Kokhan R, Matsevko-Bekerska L, Lysanets Yu. Conversation analysis tool as an effective means for teaching the university courses of English and world literature. Arab World English Journal. 2020;Vol.11(4):307-318. doi:10.2139/ssrn.3764282

9. Meredith J. Conversation analysis, cyberpsychology and online interaction. Social and Personality Psychology Compass. 2020;14:e12529. doi:10.1111/spc3.12529

10. Meredith J. Conversation analysis and online interaction. Research on Language and Social Interaction. 2019;52(3):241-256. doi:10.1080/08351813.2019.1631040

11. Ong B, Barnes S, Buus N. Conversation analysis and family therapy: A critical review of methodology. Family Process. 2020;59:460-476. doi:10.1111/famp.12431

12. O'Reilly M, Kiyimba N, Lester JN et al. Reflective interventionist conversation analysis. Discourse & Communication. 2020;14(6):619-634. doi:10.1177/1750481320939710

13. Hakuta K, Zwiers J, Rutherford-Quach S. Constructive classroom conversations: Mastering language for college and career readiness. Lecture notes. 2016. https://www.classcentral.com/course/novoed-constructive-classroom-conversations-mastering-language-for-college-and-career-readiness-3272

14. Calderon MA, Demoly P, Gerth van Wijk R, et al. EAACI: A European Declaration on Immunotherapy. Designing the future of allergen specific immunotherapy. Clin Transl Allergy. 2012;2(1):1-8. doi:10.1186/2045-7022-2-20

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