

Effective Lecturer-Student Microphone Use in a Lecture Room: A Useful Approach for Teaching and Learning Pharmaceutical Science English

FOONG FW* (affw78@mb.kyoto-phu.ac.jp), Matsuno H, Ogasawara H, Noguchi A, Hasegawa K and Wajima R

Department of English for Pharmaceutical Science Communication, Kyoto Pharmaceutical University, Kyoto, Japan

Received: October 16, 2014

Accepted: December 12, 2014

Abstract

Purpose: In this study, we investigated if effective teaching and better understanding of pharmaceutical science English (PSE) lectures would be established with microphone use (MU) involving the lecturing (lecturer/professor) and listening (students) parties. **Methods:** A total of 247 university students in two Japanese universities participated in the study. Lectures for the semester were interactive: students were encouraged to participate by reading passages in the book or written contents on the board, answering questions posed by the lecturer, and other means. On different occasions, the lecturer would use different MU patterns: i.e. no MU for the students and lecturer (NMU), MU for only the students (SMU), or MU for only the lecturer (LMU), or MU for both the lecturer and the students (LSMU). At the end of semester, students were given a lecture-feedback questionnaire to answer. They were encouraged to state the reasons for their own MU choice. **Results and Discussion:** The effective response rate was 57% (141/247). Of the 141 MU-relevant responses, 7 (5%), 12 (9%) and 117 (83%) respectively opted for LMU, SMU and LSMU, although 4 (3%) preferred NMU. The major reasons for opting LSMU by students were in the following order of preference: Acoustically well perceived (50%); to receive immediate response from the lecturer (15%); to appreciate various/different PSE contents/passages (10%) among others. From observations during lectures executed by the lecturer and findings from the present study, the high preference for LSMU (83%) reflected the need for MU by both lecturer and students during lectures (vs NMU, SMU, LMU) to enhance comprehension of the lecture and enunciation by students.

Keywords: Student-lecturer microphone use (MU), teaching/learning of science English

1. Introduction

Science English (SE) is a form of English used to name, describe, compare, explain, analyze, design, evaluate, and theorize how phenomena and events unfold in the natural world.¹ In addition, SE is required for expressing thinking, persuasion, reasoning, valuation, exchange of ideas, and common interactive communication in science-orientated disciplines, with technical terms and typical expressions required to transmitting scientific discoveries and concepts.²⁻⁸ The ability to communicate in pharmaceutical science English (PSE) is therefore a very important element in talking about pharmaceutical sciences, especially for English as a foreign language (EFL) learners.

It has been demonstrated that teaching science requires effective interactive communication between the lecturer and students in universities.¹ Unilateral microphone use (MU) by lecturers is common in lecture rooms^{9,10} as it has the following advantages: (i) all students in the classroom can hear what is being said by the lecturer; (ii) voice fatigue can be reduced; and (iii) MU can better command the attention of students. Evidence in favor of MU has been positively established mostly in the elementary and secondary levels, as younger students tend to be more noisy, talkative and undisciplined than their seniors during classes. At the tertiary level, students tend to behave more maturely, and

rarely talk during lectures. However, it is nonetheless still common during lectures for professors to observe university students nodding their heads out of sleepiness, scribbling aimlessly, reading materials not relevant to the lecture, or being unwilling to comment or participate when asked to by lecturers: i.e. in answering to questions or with regard to textbook passages/contents. Furthermore, even if they do participate, their voices are barely audible. These typical negative behaviors are related to situation they are placed in: viz., (i) being sedentary or relatively inactive throughout many lectures in one day; and (ii) having MU by only the lecturer (especially in Japanese universities).

Although MU is beneficial to both students and lecturer, a pattern that provides the most efficacious learning has yet to be investigated and confirmed. Therefore, in the present study, we endeavored to establish a more interactive teaching-learning environment involving MU by both parties (students and the lecturer): i.e. stimulating students to be more interactive, participatory, and having the lecturer and students be able to provide better auditory and vocal stimuli to the benefit of both parties.

2. Methods and Subjects

2.1 Subjects

A total of 247 university students in the first year (Yr-1) (n=60), Yr-2 (n=82), and Yr-3 (n=105) from two different Japanese universities participated in the study. Students

were exposed to PSE learning for the first time.

2.2 Methods

Lectures for the semester were interactive: students were encouraged to participate by reading certain contents/passages from the book or contents/passages written on the board, answering questions posed by the lecturer, and or commenting on the book or lecture materials after lecture. On different occasions in performing these tasks, the lecturer would use different MU patterns (Fig. 1): i.e. non-MU for the students and lecturer (NMU), MU for only the students (SMU), or MU for only the lecturer (LMU), or MU for both the lecturer and the students (LSMU).

2.3 Filling in questionnaire

At the end of semester, students were given a lecture-feedback questionnaire to answer (Table 1). Although not compulsory, students were encouraged to respond to the question posed on MU, and express reasons for their choice of the aforementioned four MU patterns.

3. Results

Of 247 answered questionnaire sheets received, 141 were relevant (effective response rate: 57%), and 106 responses did not answer the questions posed on MU.

3.1 Questionnaire Feedback and Results

Of the 141 MU-relevant responses, 7 (5%), 12 (9%) and 117 (83%) students respectively opted for LMU, SMU and

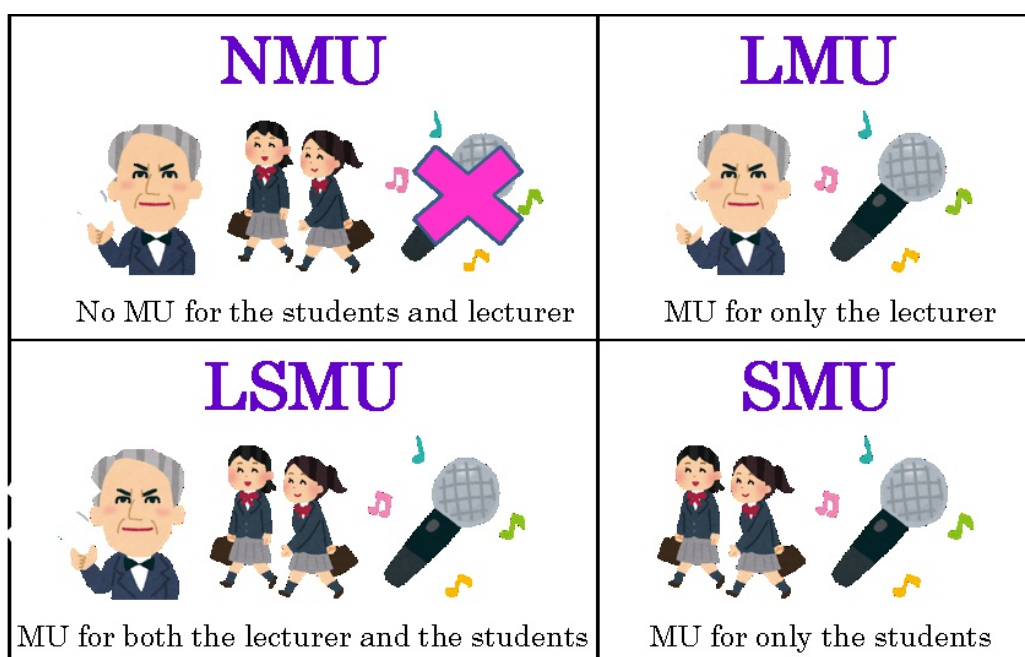


Fig. 1: Four different pattern of microphone use (MU)

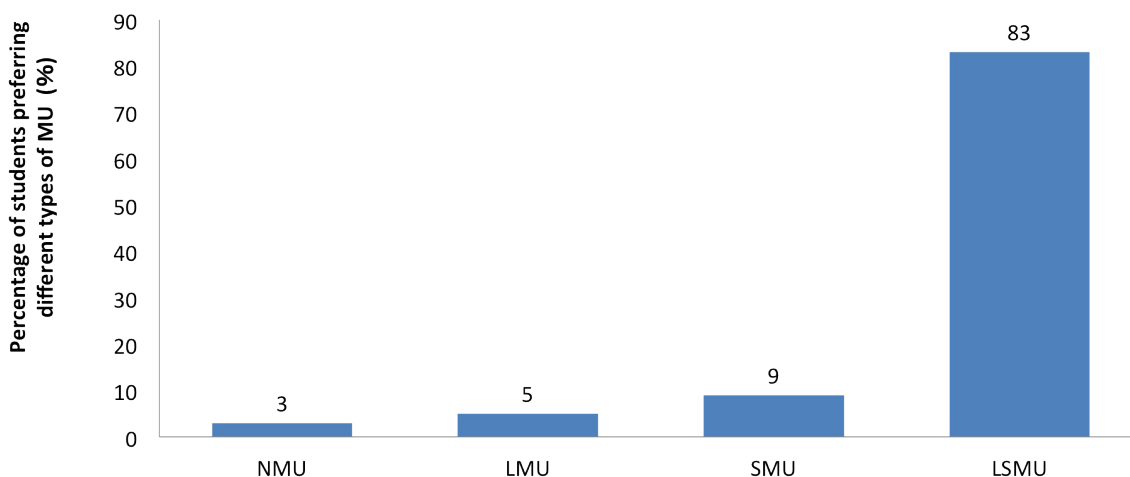


Fig.2: Of 141 students, 83% preferred MU by both lecturer and students (LSMU)

LSMU, although 4 (3%) preferred NMU (Fig. 2). When the lecturer was asked to choose the best MU pattern, his preference concurred with the majority of students (83%).

3.2 Reasons for Student Perception Results

The 7 major reasons cited by students for the preference of LSMU were in the following order of preference (Table 1): (i) to be acoustically well perceived by students (facilitating better comprehension of spoken content; 50%); (ii) to receive immediate correction of mispronunciation or improper/inappropriate answers by lecturer (15%); (iii) to listen well and understand various/different PSE materials (10%); (iv) to better focus on lectures due to MU-stimulated attention (10%); (v) to prevent falling asleep or feeling sleepy (5%); (vi) to build self-confidence in public speaking while holding a microphone and during MU (5%); and to have fun speaking PSE with a hand-held microphone (5%).

4. DISCUSSION

Lecturer-student interactive communication has always been advocated to provide the most efficacious teaching-learning effect.^{11,12} Conventional lecturing where only the lecturer speaks can be boring and uninteresting for students, even when the lecturer uses a microphone. However, lectures with only MU by students may not be well coordinated. Students may not be able to listen to comments by the lecturer, and can be unruly at times, resulting in them not achieving proper understanding of the lectures. Furthermore, as PSE comprises numerous technical terms and special expressions and numeral/unit enunciations,¹⁴ it is all the more important that EFL learners/students are able to listen to what the lecturer says (and vice versa) for efficacious acquisition of SE,

and more specifically PSE. The present study endeavored to establish a more interactive teaching-learning environment via lecturer-student microphone use (LSMU), which allows for the lecturer to deliver stimuli, and for the students listening to perceive the information and then respond in an interactive manner, and vice versa.

4.1 Preference of MU pattern

From observations obtained during lectures executed by the lecturer and findings in the present study, the high preference for LSMU (83%) reflected the needs for MU by both lecturer (at least in the present study) and students during lectures (vs NMU, SMU, LMU). As for the 7 respondents (5%) that preferred LMU, they complained that the allocated lecture-time would not be fully used by the lecturer, or that time was wasted when the microphone was passed from one student to another. Another 12 respondents (9%) preferring SMU argued that the lecturer spoke loud enough (probably with voice fatigue), and therefore LMU was not necessary, although they did not express concern for time loss and other disadvantageous consequences of LMU. The 4 (3%) respondents preferring NMU complained about rare/occasional acoustic squawking (due to electrical resonance), or the arrival of microphone was more of a nuisance when they did not feel like speaking, answering questions, or making comments.

4.2 Factors contributing to the preference for LSMU

Of the four MU patterns, LSMU commanded attention of the whole class and presented a useful and markedly efficient approach for the reasons cited in Table 1.

Table 1: Students answer questionnaire on the most effective microphone use

Reasons for the preference of microphone use by lecturer and students (LSMU)	Preference (%)
1. Acoustically well perceived; facilitating better comprehension of spoken content	50
2. Ability to spot with immediate correction of student mispronunciations by lecturer	15
3. Ability to acoustically appreciate various/different science English contents	10
4. Ability of students to focus on lectures due to attention induced by microphone us	10
5. Difficulty in falling asleep or feeling sleepy	5
6. Building self-confidence in public speaking using science English	5
7. Speaking science English with a hand-on microphone is exciting and fun	5

4.2.1 Audibility with clear acoustic reception

Listening is the ability to accurately receive and interpret messages delivered by the speaker in the communication process. Listening is key to all effective communication, especially in discussion and at meetings. Without the ability to listen effectively messages are easily misunderstood – communication breaks down and the sender or speaker of the message can easily become frustrated or irritated.¹³ It is then obvious that students can only understand what is being taught when they can hear the lecture well enough. With regard to language acquisition, especially for EFL learners learning PSE in a foreign language (e.g. English) and for lectures teaching PSE using the same foreign language (i.e. English), the enunciation of words, numerals, chemical names/compounds, mathematic/chemical equations, and English enunciation of Greek- and/or Latin-derived terms is important in teaching and learning SE¹⁴ (Table 1).

4.2.2 Prompt response from the teaching party

With the LSMU approach, proper expression can be: (i) shared by both lecturer and students; (ii) corrected by lecturer when students used PSE inappropriately; and (iii) achieved overall interactive teaching and learning. The choice to use a microphone may be important.² The use of a pendant-type microphone allows the hands of the lecturer to be free to write on the board and manipulate sound devices, although it may be impractical for students to each have a pendant-type microphone. Students may have to use a microphone with a handle, as it can be passed round the class for everyone to participate in the lecture interactively (Table 1).

4.2.2 Promotion of focusing attention in learning

It is very often that students tend to doze off, or be non-attentive, or ‘day-dream’, during lectures. This may be because they are bored of just sitting and taking notes or scribbling aimlessly, or because the teaching materials

are uninteresting or just not adequately attuned to their ‘wavelength’ to capture or focus their attention. Since the LSMU approach is interactive and can help direct students towards greater interaction (Table 1), students’ mind will be more focused on learning instead of ‘wandering’ in other directions (10%), or fighting sleepiness (5%). As indicated by some (5%), holding a microphone can be fun and exciting, and therefore can hold their attention.

4.2.3 Confidence building with MU

Cognitive¹⁵ and affective¹⁶ variables influence confidence building. Apart from providing a certain amount of ‘mental security’ for nervous students, a microphone with a handle may facilitate confidence building in those uncertain of their answers or experiencing shyness (5%).

The above are critical elements - not only at the secondary level but also at the tertiary level - for students to acquire knowledge and skills, and especially in enhancing language ability in PSE learning. As demonstrated in the present study, MU is even more crucial for those participating for the first time in PSE courses, particularly for EFL learners.

All in all LSMU commanded the near-full attention of the class and provided a useful and markedly efficient approach, especially for teaching and learning of PSE, as appropriate enunciation of words, numerals, units, chemical names/compounds, mathematic/chemical equations, English enunciation of Greek/Latin terms, and proper expressions¹⁴ can be delivered and heard.

5. Conclusions

MU has the following additional advantages complementary to the aforementioned points: (a) the lecturer/professor and other students can mutually hear what is being said by the speakers (students and lecturer)

even at a low-volume voice; (b) voice fatigue can be reduced in both teachers and students; (c) holding a microphone can provide students with confidence in public-speaking; (d) the choice of MU pattern may be important; and (e) MU use can command the attention of all students.

References

1. Foong F. W., WAJIMA, R., Matsuno, H., Hasegawa K., and Ogasawara H. (2015). First-Time Oral Presentation in Pharmaceutical Science English: Questionnaire Feedback from Pharmacy Students in a Japanese University. *J of Acad Soc for Quality of Life* 1(1); pp.1-5.
2. Foong, F.W., Fujiwara, N., Fujita, A., Okazaki, Y., Inoue, Y., Higuchi, Y. (2013). Needs of Learning Tools for Acquiring Scientific English in a Japanese University: A Controversial Issue. *Global Summit Education (GSE) Journal of Education*, pp. 207-212.
3. Gardner, P. L. (1974) Language Difficulties of Science Students. *The Australian Science Teachers' Journal*, 20(1): 63-67.
4. The National Curriculum for England, QCA, London. (1999). pp 69.
5. White, R. T. (1988). *Learning Science*. Oxford: Basil Blackwell.
6. Wellington, J. & Osborne. J. (2001). *Language and Literacy in Science Education*. Open University Press Buckingham – Philadelphia.
7. Lemke, J. L. (1990). *Talking Science: Language, Learning and Values*. Norwood, NJ; Ablex.
8. Muralidhar, S. (1991). The Role of Language in Science Education; Some Reflections from Fuji. *Research in Science Education*, 21:253-262.
9. Education World. Microphone-Toting Teachers Grab Students' Attention. (http://www.educationworld.com/a_issues/issues/issues242.shtml).
10. Concept: Using a microphone in the classroom benefits both students and teacher. (Panasonic.net/pss/irw/concept.html).
11. Slavin, R. E. (1995). *Cooperative Learning: Theory, Research and Practice* (2nd edn.). Boston: Allyn and Bacon.
12. Johnson, D.W., & Johnson, R.T. (1990). *Cooperative Learning and Achievement*. In S. Sharan (Ed.), *Cooperative Learning: Theory and research*, 23-37. New York: Praeger.
13. Listening skills. <http://www.skillsyouneed.com/ips/listening-skills.html#ixzz3PRqkvzam>
14. Foong, F.W., Higuchi, Y., Hirai, A., Fujita, A., Fujiwara, N., Okamoto, S. (2013). English for sciences in a Japanese university: Expressing Chemical Elements, Compounds, and Mathematical Equations. *GSE Journal of Education*, pp. 200-206.
15. Gardner, R. C. and MacIntyre, P. D. (1992). A Student's Contribution to Second-Language Learning. Part II: Affective variables. Part I: Cognitive Variables. *Language Teaching* 25(4), 211-220.
16. Gardner, R. C. and MacIntyre, P. D. (1993). A Student's Contribution to Second-Language Learning. Part II: Affective variables. *Language Teaching* 26(1), 1-11.