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Issues of University Junior Teaching Staff in Writing Scientific Manuscript at a Japanese University

Sako IKEGAMA¹, Anthony Foo Wah FOONG²

¹ Sakotrans Medical, 7-8-8 Nishiokamoto, Higashinada-ku, Kobe city, Hyogo 658-0073, Japan sako@sakotrans.com

² Language Research & Development, Imex Japan Co. Ltd., 3F Imex Building, 22-8 Shimomidori-cho, Shichiku, Kita-Ku, Kyoto 603-8425, Japan

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ANNOUNCEMENT

- The 2017 International Conference on Quality of Life was held in Penang Malaysia on August 20th-21st.
 - Proceedings as well as photos and other information from past conferences can be found on our website.
 - More information at <http://as4qol.org/icqol/2017/>
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Issues of University Junior Teaching Staff in Writing Scientific Manuscript at a Japanese University

Sako IKEGAMA¹, Anthony Foo Wah FOONG²

¹ Sakotrans Medical, 7-8-8 Nishiokamoto, Higashinada-ku, Kobe city, Hyogo 658-0073, Japan (sako@sakotrans.com)

² Language Research & Development, Imex Japan Co. Ltd., 3F Imex Building, 22-8 Shimomidori-cho, Shichiku, Kita-Ku, Kyoto 603-8425, Japan

ABSTRACT

Results from a workshop on scientific manuscript-writing (SMW) organized by Imex Japan Co. Ltd. are described. The workshop address the guidelines and pre-requisites for manuscript-writing (i.e. basic rules and ordering of SMW). The workshop lecture attenuated many pre-lecture concerns that participants had after the lecture. Attention on items of special concern were focused on in the 'ntroduction', 'Discussion', 'Title-making' and 'Abstract' sections. Participants markedly benefitted from acquiring better understanding of SMW, and concerns/issues prior to the workshop lecture were remarkably reduced after the lecture.

1. INTRODUCTION

Discoveries made in research have to be documented and published as scientific manuscripts (SMs) to claim authority, novelty, and original rights of invention, and to received global acknowledgment for the achievement of said discoveries. Additionally, this applies similarly for recognition of the *significance* of the achievement, discovery, and novelty by global authorities. Without publication, the discoveries will be forgotten and perish over time, if they remain undetected and ignored.¹ The writing of a scientific manuscript has its rules and order so readers can appreciate the content well and clearly. It is difficult for author(s) to write an English manuscript in their own native tongue, and even more so for those who have to write in a foreign language.

Although ostensibly in the (English) language category, science English (SE) is a medium with a special purpose (English for Special Purposes, or ESP). SE is an ESP because it requires the understanding and learning and

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acquisition of various science-related technical terms and content-specific expressions.²⁻⁴ In other words, SE has a certain specific manner of expressing experimental observations, reasoning, valuations, analyses, data, and routine communication in content-orientated disciplines.¹ Apart from its use to name, record, compare, explain, analyze, design, evaluate, explain, and theorize on how the natural world appears to us, it adheres to the functional use of certain technical terms, typical expressions, materials and tools⁵ relevant to transmitting scientific concepts and discoveries,^{6-9,10} SE may be acquired by EFL learners over time if students are given the proper system to learn and acquire listening, speaking, and writing skills for communication.

2. MATERIALS AND METHODS

2.1 *Subjects*

A total of 28 (male: 20; female: 8) Japanese junior staff (junior lecturers, assistant professors, teaching assistants; age-range: 26-32 yr) in a private university A attended a workshop on scientific manuscript-writing (SMW) organized by Imex Japan Co. Ltd. based in Kyoto. Participants were all scientifically trained personnel, who might or might not have previous experience writing a SM and/or giving oral presentations using posters/slide-shows.

2.2 *Lecture and Questionnaire*

They were given a questionnaire to complete before and after receiving a lecture on the rules, order of sections, and basics of SMW. Apart from accessory information such as affiliations, addresses, acknowledgments, and listing references (which would be studied in subsequent sessions, if necessary), the questionnaire of the present workshop focused on major sections of scientific manuscripts (abstract, introduction, methods, results, discussion), and enquired as to their experience and knowledge of SMW as follows: (1) SMW and presentation experience; (2) issues of concern in writing the introduction, methods, results, and discussion; (3) title-making; and composition of the (4) introduction; (5) methods; (6) results; (7) discussion; and (8) abstract/summary sections. The questionnaire was completed on a multiple-choice answer basis.

The lecture, which lasted about 90 min, covered the guidelines and pre-requisites for manuscript-writing (i.e. basic rules and ordering of SMW): i.e. name of author(s), affiliation(s), address(es), and other aforementioned items. Participants marked the answers in triangles (before) and double-circle (after) the lecture. Participants were free to ask questions during the course of the lecture whenever and wherever they wished to do so.

For the questionnaire questions enquiring as to the concerns of participants about writing the various SM sections, items with more than 30% of the number of participants (or 9 or more of 28 participants) before lecture were considered markedly concerned items in this study. In cases where the 30% or more (rounded to the nearest percent) of participants still found the item a concern or issue after the workshop lecture, guidelines were introduced to facilitate further understanding in nuance acquisition of the items in relevant sections

3. RESULTS

3.1 *SMW and presentation experiences*

Of the 28 participants, 2 had not written any SM, 21 had written and published SMs, and 8 had intention to write SMs. As for oral presentation, 2 had not given any in Japanese or English presentations, 18 had presented Japanese presentations, and 17 in English presentations. As for poster presentations, 3 had not given any, 12 had given Japanese presentations, and 18 had given English presentations.

3.2 Issues of concern in SMW before and after workshop lecture

When participants were asked before and after the lecture about their concerns about writing the ‘Introduction’, ‘Methods’, ‘Results’ and ‘Discussion’ sections, the number of students expressing such concerns were 17, 3, 3, and 14 (before) and 6, 1, 1, and 2 (after), respectively, showing marked concerns on the ‘Introduction’ and ‘Discussion’ sections. However, the result indicates that reductions in their concern in all sections, especially in introduction and discussion (Table 1, right).

Table 1

Issues of concern of university academic staff in manuscript writing

	<u>Explanation</u>	
	<u>Before</u>	<u>After</u>
Introduction	17	6
Methods	3	1
Results	3	1
Discussion	14	16

3.3 Concern about title-making before and after the workshop lecture

As for their concern about title-making (before vs after the lecture), results for the following questions were as follows: [1] ‘Don't know the best way or what is demanded to do it’ (10 vs 4); [2] ‘Don't know how to have an impact’ (14 vs 15); [3] ‘Not well-versed in using phrases’ (3 vs 4); and [4] ‘Tend to use too many verbs and long sentences’ (3 vs 2). Participants appeared to handle title-making well; however, the number yearning to make the title carry impact (i.e. [2]) is especially notable (Table 2, right).

Table 2

Before and after explanation:
TITLE-making

1. Don't know the best way or what is demanded of	10 (4)
2. Don't know how to make it impact-making	14 (15)
3. Not well-versed in using phrases	3 (4)
4. Tend to use too many verbs and long sentences	3 (2)

3.4 Concern about the ‘Introduction’ section before and after workshop lecture

When participants were asked what their concerns were on the ‘Introduction’ section (before vs after lecture), results (Table 3, right) were as follows: [1] ‘Don't know what/how to begin with’ (5 vs 4); [2] ‘Don't have enough background knowledge’ (10 vs 7); [3] ‘Don't know the necessary points to write’ (12 vs 9); and [4] ‘Not sure of the grammar to be used’ (7 vs 5). The main concerns about ‘Introduction’ were found to be a lack of background knowledge on the relevant research theme (i.e. [2]) in which concern was attenuated post-lecture, probably due to better understanding of how to approach the problem; however, as for the necessary points to write in orientating readers on the research theme (i.e. [3]), attention was needed to provide further elaboration to orientate the participants.

Table 3

Before and after explanation:
INTRODUCTION

1. Don't know What/How to begin with	5 (4)
2. Don't have enough background knowledge	10 (7)
3. Don't know the necessary points to write	12 (9)
4. Not sure of the grammar to be used	7 (5)

3.5 Concern about the ‘Methods’ section before and after workshop lecture

As for their concerns on the ‘Methods’ section (before vs after lecture), participants felt they: [1] ‘Don't know what/how to begin writing this section’ (5 vs 3); [2] ‘Don't have enough background or supporting information’ (1 vs 3); [3] ‘Don't know the necessary points to write’ (10 vs 4); [4] ‘Not sure of the grammar and unit abbreviations to be used’ (11 vs 8); and [5] ‘Don't know/have enough knowledge in Latin/Greek’ (2 vs 2). Although more than 30% of participants were concerned about [3] and [4], most of them appreciated the hints and the proper ways to deal with these 2 items in the workshop lecture given.

3.6 Concern about the ‘Results’ section before and after workshop lecture

With regard to the ‘Results’ sections, participants responded (before vs after lecture) as follows: [1] ‘Don't know what/how to begin with the section’ (3 vs 3); [2] ‘Don't have enough background or support information’ (10 vs 7); [3] ‘Don't know the necessary points to write’ (4 vs 2); [4] ‘Not sure of the grammar to be used’ (6 vs 5); and [5] ‘Don't know/have enough knowledge in Latin/Greek’ (3 vs 3). Partici-

pants found this section to be well appreciated, and the number who expected problems or expressed concern was negligible.

3.7 Concern about the ‘Discussion’ section before and after workshop lecture

As for the ‘Discussion’ section, which is the most difficult section in manuscript-writing, results (Table 4, right) showed concern by participants in more areas than for other sections (before vs after): [1] ‘Don’t know what to begin with or the necessary points to write’ (11 vs 7); [2] ‘Don’t know enough and where to find relevant information’ (8 vs 5); [3] ‘Don’t know how to make effective presentation’ (11 vs 9); [4] ‘Not sure of the grammar to be used’ (7 vs 5): and [5] ‘Don’t know/have enough current knowledge to compare and contrast with past literature’ (5 vs 5). Although issues on the various items before the lecture were markedly noted, only item [3] (not knowing how to make effective presentation) remained as requiring attention to clarify their concerns. The workshop seemed to have clarified certain questions or issues anticipated by the participants before the lecture.

Table 4

	Before and after explanation:
	DISCUSSION
1. Don’t know what to begin with or the necessary points to write	11 (7)
2. Don’t know enough and where to find relevant	8 (5)
3. Don’t know how to make effective presentation (with/without illustrations)	11 (9)
4. Not sure of the grammar to be used	7 (5)
5. Don’t know/have enough current knowledge to compare and contrast with past literature	5 (5)

3.8 Concern about writing the ‘Abstract’ before and after workshop lecture

With regards to the ‘abstract’ section, participants responded to the relevant items (before vs after lecture) as follows: [1] ‘Don’t know what/how to begin with’ (7 vs 3); [2] ‘Don’t know the necessary points to be written or required’ (8 vs 2); [3] ‘Tend to exceed the word limit’ (9 vs 9); [4] ‘Not sure of the grammar to be used’ (8 vs 6). Although all 4 areas began as issues of high concern, results in 3 areas of concern were improved after the lecture; however, item [3] remained unchanged (Table 5, right).

Table 5

	Before and after explanation:
	ABSTRACT
1. Don’t know what/how to begin with	7 (3)
2. Don’t know the necessary points required	8 (2)
3. Tend to exceed the word limit	9 (9)
4. Not sure of the grammar to be used	8 (6)

4. DISCUSSION

4.1 Language background

Being fortunate enough to be blessed with native fluency in English – the current most extensively employed language in scientific journals – is an advantage in English literature writing, but it may not necessary give one a free pass in scientific manuscript writing (SMW) and publishing. This is because, knowledge in SMW has to be learned and acquired even for a native English speaker. In the case of EFL (English-as-a-foreign language) learners such as the Japanese participants, SMW is a task that has to be learned gradually. English-native students tend to acquire SMW skills over a shorter period of time (2-3 yr) compared to their non-English native peers, although non-native speakers who have undergone the challenge of learning to use English may prove equally capable of SMW given time and the proper guidance.

4.2 Actual experience and Guidance in SMW in Japanese Graduate Schools

Participants in this workshop had already been awarded either the Master or Doctorate Degrees, and they were serving as academic staff in University A at the juncture of holding the workshop. They appeared to have certain degree of experience in publishing SM (except for the 7% who had yet to write any). Despite having experience in SMW, they showed concerns or had issues in certain of the various sections of a manuscript. However, concern about many of these areas were either attenuated or became negligible after the workshop lecture, demonstrating that the lecture helped to clarify their concerns and answered questions that had bothered them before the lecture. In Japanese graduate schools, although graduate students took the lead in writing up papers, the final version appeared to usually have more than 60% of the original draft cancelled out, and was most likely replaced with thoughts and arguments, etc. from students’ supervising staff such as their associate professors and the head of relevant department. The important ‘missing’ guidance here is: students are not told the ‘why’ and ‘how’ in the revisions, unless students ask their superiors (Japanese students usually do not ask or dispute what has been written). This unhealthy practice is usually the result of understaffing and the large number of graduate

students admitted to the department, where the senior staff and chairpersons are usually too busy with their teaching and research work. Because of this circumstantial inadequacy- and cultural practice-derived undersirable habits, students harbored various concerns and issues about SMW even after graduation with Master or Doctorate degrees, especially those who were quiet and reluctant to pursue inquiries.

4.3 Items detected in the various sections in SMW

Based on post-lecture concerns with responder counts of 30% or more (i.e. 9 or more responses for each item), we explained and elaborated the basic needs, and further advised participants on the necessary actions to take in resolving concerns or issues detected in several items and sections. Specifically, although overall concerns of participants were attenuated markedly in the 'Introduction' and 'Discussion' sections after the workshop lecture, we anticipated that the junior-staff participants needed a reorientation and in-depth briefing as they appeared not to have fully understood certain items in the 'Introduction' (i.e. not knowing the necessary points to write) and 'Discussion' (i.e. not knowing how to make an effective presentation) sections. Additionally, certain items in 'Title-making' (i.e. not knowing how to make the title impactful) and 'Abstract' (i.e. tending to exceed the stipulated word-count) were of concern to participants.

4.4 Resolving concern on the item detected in the 'Introduction' section in SMW

Participants found writing the necessary information for the 'Introduction' a concern (Table 2). First, authors-to-be have to understand what the 'Introduction' in a SM requires. Basically, 'Introduction'¹ requires the author(s) explain about their choice of investigation and the significance/importance of their investigation.¹ Therefore, once the author(s) has prepared this information, he/she can just write the introduction usually by discussing the pros and cons or the background of the research theme in question, and before proceeding to go into the 'Methods' section. Apart from review of pertinent and relevant literature to orientate readers in following the flow of the manuscript, it is always useful to write briefly on the nature and scope of the problem and any controversies involved with the theme under investigation. It is also suggested to inform readers of the methods of investigation and the choice of methods employed. Depending on the author, the principal results and conclusions could additionally be given. When summarizing or recalling published findings, it is always gracious to express the findings in the present tense or present perfect tense. Past tense for specific manuscript(s) may be used when the results/findings of the manuscript have been found to contradict the above-cited literature.

4.5 Resolving concern on the item detected in the 'Discussion' section in SMW

It is obvious that many items in this section induced concern before the lecture (Table 3); however, despite the guidance and explanations given during the workshop lecture, one item (not knowing how to make an effective presentation) remained stubbornly unchanged, implying that the lecture did not attenuate this concern. Therefore, we elaborated on this section with special emphasis on instilling effective presentation skills when writing the 'Discussion'.

Of the many manuscripts submitted for review by referees, this section appears to be the toughest nut to crack. In fact, many manuscripts submitted in journals are rejected based on incompetent writing in this section. In the 'Discussion' the author(s) usually should focus on writing the major important findings. The principle implications, relationships with previously reported data, and plausible conclusions based on the results should be addressed. Additionally, it is useful to point out exceptions or lack of correlation, and define unsettled issues. In the results, unaccounted for findings (there are always mysteries in science) should be mentioned; who knows, it could be the beginning or a hint of a new discovery. The practice of data falsification is strongly discouraged, and should never be attempted. In cases where results and interpretations of the written manuscript correlate well (or contradict) previous documented studies, these findings should also be mentioned. The discussion may impact readers when potential implications and/or possible practical applications based on results and other comparable studies in providing solutions to clinically idiopathic issues and life-saving possibility are effective presentations.¹ When writing conclusions at the end of this section, always summarize the evidence for each conclusion. In mechanisms involving complex systems, an illustration facilitating comprehension of the text is always useful – like they say - a picture speaks a thousand words. As in the 'Introduction', present and present perfect tenses describe established prior findings, while conclusions or descriptions related

to the work of the present manuscript should be accounted for using the past or past perfect tenses.

4.6 Resolving concern on Title-making detected in SMW

Titles in SMs are usually made in the shortest possible form, with direct, clear, and concise description of the content and significance of the study. The keywords used in the title convey the content and message or conclusions implied in the study. Abbreviations are usually not recommended unless for certain specialized journals (e.g. the use of 'HIV' in the Journal of Immunology and so on'. Therefore, the concern in writing out an impact-making title always involves the use of following words: novel/novelty, new, original, etc.). It is not helpful to make long-winded titles, if an impact-making title is desired. Extensive reading of a variety of published literature should help, especially in cases of EFL (including Japanese) scientists. Although this appears first before the 'Introduction' and other sections, the title should be composed after the manuscript has been written: a better picture of the study is then formulated, and more appropriate terms and wording would be used to have greater impact, if required.

4.7 Resolving concern on the 'Abstract' section in SMW

Although the 'Abstract' is located before the 'Introduction' section in all current journals, the workshop lecture instructed participants to write the abstract after having completed writing the main body of the manuscript (as with the title), because the choice of included discussion and supporting results and evidence can then be geared to validating the manuscript content as a whole. Therefore, the main content of the manuscript should be done first, and the information required for the abstract (and title) is then extracted and arranged into one passage (usually without paragraphing, although there are exceptions). In doing so, participants were concerned that they would tend to exceed the word-count (usually 250 words in many journals; with exceptions). This tendency is due to the tendency of scientists (especially Japanese scientists) to write for clear understanding by providing details and supportive words. A short concise simple sentence does not provide enough clarity, and often they would fail to omit words that actually can be deleted, thus making them exceed the word count. Junior scientists often encounter such a situation; however, with a little practice, exposure, and experience, many eventually overcome this issue.

4.8 A summary in SMW

Scientific Manuscript Writing

Ask yourself these questions when you write your manuscript:

- 1) TITLE** • **What is your study about?**
- 2) ABSTRACT** • **What did you do and find?**
- 3) KEYWORDS** • **What are the representative words in abstract?**
- 4) INTRODUCTION** • **What is your problem(s) or phenomenon in your study?**
- 5) METHODS** • **How did you solve the problem(s) or explain the phenomenon?**
- 6) RESULTS** • **What did you find?**
- 7) DISCUSSION** • **What is known so far**
 - * **What did you find out on the previously unknown?**
 - * **Any correlation/discrepancy with previous findings?**
 - * **Implication and application of findings?**
- 8) CONCLUSIONS** • **What can you finally say?**
- 9) ACKNOWLEDGEMENTS** • **Who helped/provided the funds?**
- 10) REFERENCES** • **Relevant information referred**

For many young junior and scientists inexperienced in SMW, a summarized approach may help (Fig. 1). When writing a SM, one can look through the table above and the manuscript will be written well by just answering question(s) posed for the respective section.

In summary, the workshop lecture attenuated many pre-lecture concerns that participants had after the lecture. Attention on items of special concern were focused on in the 'Introduction', 'Discussion', 'Title-making' and 'Abstract' sections. Participants markedly benefitted from acquiring better understanding of SMW, and concerns/issues prior to the workshop lecture were remarkably reduced after the lecture.

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