



Correspondence:

China's graduate students need better education in scientific writing and publishing*

Chun-jie ZHANG^{†1}, Yuan ZHU^{†‡2}

⁽¹⁾Department of Mathematics, Hangzhou Dianzi University, Hangzhou 310018, China)

⁽²⁾Graduate School, Zhejiang University, Hangzhou 310027, China)

[†]E-mail: purezhang@hdu.edu.cn; yuan_zhu@zju.edu.cn

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1 Background

The fast development of China's postgraduate education has led to a total number of 2 million enrolled graduate students with about 70 000 doctoral degree recipients and 500 000 master's degree recipients each year (Zhu *et al.*, 2014). The policy adopted by many universities that a certain number of published articles are necessary for their degrees means that almost all the graduate students have started their paper writing and submitting when they are still at school.

Yuan *et al.* (2015) investigated the articles published in 2012 in certain top Chinese journals. Some of their data are listed in Table 1 to show the contribution rate of China's postgraduate students.

From Table 1, we find that graduate students are highly involved in the articles published in local journals. We can draw a similar conclusion on students' contribution at the more international level, as indicated by Table 2 (Yuan *et al.*, 2014).

However, student authors have their limitations. Apart from the relatively low academic level (which we will not discuss here), they exhibit various problems in the whole process of manuscript writing and

Table 1 Contribution rate of China's postgraduate students in certain top Chinese journals in 2012*

Article	Number	Ratio (%)	Average contribution rate (%)
Total	12 347		32.31
Authored or co-authored by student	11 370	92.09	
Student as first author	5048	40.88	

* Data were extracted from Yuan *et al.* (2015)

Table 2 Contribution rate of China's postgraduate students in ESI-indexed journals during 2011–2012*


Article	Number	Ratio (%)	Average contribution rate (%)
Total	210		36.84
Authored or co-authored by student	160	76.19	
Student as first author	110	52.38	

* Data were extracted from Yuan *et al.* (2014)

publishing, from minor ones such as language and presentation, to the more severe ones like academic misconduct. The poor language and writing skill of China's new authors have bothered many editors of English journals. Also, graduate students' names appear frequently in many recently reported cases of academic misconduct, like the Hai-bo HE's case and the BioMed Central (BMC) retraction case. What's more, our graduate students do not seem to have a full understanding of academic misconduct. An investigation on 2000 PhD candidates by Dr. Yan-dong ZHAO of the Chinese Academy of Science and Technology for Development finds that half of the respondents had heard of academic misconduct committed by people around them. Thirty-eight percent of respondents think they deserve sympathy and 23% believe they are forgivable (<http://jwb.ahpu.edu.cn/s/9/t/153/ad/77/info44407.htm>).

[†] Corresponding author

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 ORCID: Chun-jie ZHANG, <http://orcid.org/0000-0002-5712-8764>

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Given the data and the example cases above, we believe that China's graduate students are in great need of systematic education on scientific writing and publishing, which, right now, is poorly implemented by our higher education institutions. So below we shall discuss in detail, based on our knowledge and experience, how the graduate students could be educated during the process of article writing and publishing. On education in academic standards, many scholars have already offered their suggestions (Gao *et al.*, 2007; Zhu *et al.*, 2008). They proposed many useful steps to treat the problem. These refer to points for each of the three constituent groups, i.e., the policy maker (the institution or government agency), the advisor, and the graduate student. What we suggest below is summarized as follows: firstly for the college, it should start some systematic courses, and not by leaving it to possibly little-known college rules; secondly, as well as attending to a student's academic level or lab skill, an advisor should also cover the student's skill in article writing and publishing; finally, we discuss the role a journal can play in such expanded education, which is seldom referred to. However, in the process of article publishing, a journal sometimes takes the role of an educator or advisor unconsciously.

2 Practices we propose for colleges and advisors

2.1 What a college can do

In most colleges in China, education in scientific writing is sometimes neglected or often only offered as some optional courses. They seem believe it is the advisors' obligation to carry this out. The advisors, however, usually tend to concentrate on students' special courses or other laboratory training. Little attention is paid to their skill in scientific writing and knowledge of article publishing. Thus we believe that a college should set up non-optional courses on these two aspects.

Many forms of minor plagiarism, like cutting and pasting, paraphrasing, and inaccurate citation occurred in article (especially English article) writing, are committed by graduate students unknowingly or innocently. For example, when writing the introduction of an article, new authors usually do not know

what should be included. Even when they know what they want to say, new authors are usually awkward in introducing the origin of a subject and organizing references to previous studies. Since such contents are always similar and appear in many existing papers, cutting and pasting thus become an easy solution. Another example is referencing. There are many different styles for this. Each style is different in abbreviation, punctuation, and font (not to mention that many journals require their own special style). A new author is almost certain to make some mistakes. These are points not covered in college's general English courses and so special English and scientific writing should never be optional. There should be someone to tell the graduate students about all such issues as well as what constitutes misconduct.

Misconduct arising for a technical reason or incorrect understanding can be partly tackled by the above suggestion. More severe cases like duplicate submission, republication in translation, or even essay selling, though sometimes caused by the students' pressure to get their degrees, should never be forgivable. Many colleges in China set so-called "strict" regulations on academic misconduct. However the power of these regulations, when being implemented, is constantly weakened by the Chinese folk wisdom *to handle something peacefully*. In contrast, we strongly recommend that colleges take an objective attitude and take the necessary action on each identified case of misconduct.

2.2 What an advisor can do

Many years ago when there was no requirement for publishing, few students published articles on their own. If they did, the articles were usually written in Chinese, which would cause less trouble than English. So for advisors, little attention was paid to such issues. Raising the students' academic level was almost their only task. Currently, though we believe academic level is the still the most important aspect, advisors have to spare some attention on their students' article writing and publishing.

The material students get from special English or scientific writing courses is theoretical. They can easily be baffled by all kinds of problems that occur during a real-world writing and publishing process. So we suggest that the advisors offer close step-by-step assistance when students are writing and publishing

their first articles. There are always some unwritten rules for each specific research area, which the students should be told to look out at the very beginning. Especially when a student is writing his first English paper, the advisor's help on language editing is extremely important. In conclusion, the skills a student learns from writing and publishing his first paper will have long and lasting impact on his academic career. This thus deserves the advisor's special attention.

Another advisor's task is to see that no academic misconduct is carried out by his student. For this, just words of caution usually are not sufficient. The advisor should first set a good example, showing the student that his advisor is very serious about academic ethics. The student will learn by observing his advisor's choices and preferences through their daily communication. All these eventually will help the formation of the student's own standard on misconduct.

Advisors are suggested either to pass some review tasks they receive from journals to their students, or to contact some selected journals for possible review tasks, after the students have successfully published a certain number of articles. The change of roles from authors to referees is very instructive. "It helps me more than I help the journal," said by Dr. Xin-guo JIANG from Stanford University, a young scholar who is now an Associate Editor of *Journal of Zhejiang University-SCIENCE B (Biomedicine & Biotechnology)*. He said: "The review experiences I got in the last few years from different journals are truly helpful to broaden my knowledge in biomedical research."

3 New perspective: the journal's role

In recent years, due to the boom in numbers of submissions, many editorial offices, especially those of high-level journals, receive far more papers than they can publish. A simple solution to this is to reject some of the submissions which the editors believe will not be good enough, without any specific academic reason (or sometimes, apparently, no reason at all or at least for what appears to be an arbitrary reason). This has been a very common practice whenever an editor notices that the manuscript is from some student author and does contain some elementary errors. For the student author, such an experience can

be very demotivating and depressing. What could make a difference is, instead of a rejection letter with no specific reason, the editor may briefly point out the main shortcomings of the paper and provide some useful suggestions on how to revise. Soon the editor will find that basically he is giving similar suggestions to different authors. Thus an email template will often be adequate to help such authors.

During the review process, usually many student authors are not sufficiently patient. They will inquire more often than necessary the status of their submissions. Many editors usually ignore such inquiries. What we suggest here is to answer them, but also to tell the students to be patient, making them aware that being patient is something an experienced author must know.

After acceptance of a paper, a student author may still face various problems, which could be solved through insightful guidance from a copy editor. After all, there should be someone to tell our graduate students that scientific writing is very different from the daily language they are using, and how many times a paper needs to be proofread before publishing.

Even if his scientific writing course and advisor's teaching have covered all the above issues from manuscript preparation to the proof before publication, a new author would only mature after he has gone through all the above editorial processes and published his first paper.

Not only would the student authors learn from proper communication during the whole editorial process, but also a journal's regulations and workflows on academic misconduct would teach them a special lesson.

Plagiarism is a very common type of misconduct committed by many student authors. It varies from the minor form of cutting and pasting things like introductions, to the severe such as duplication. Many types of plagiarism can now be detected using iThenticate. Prof. Yue-hong ZHANG in her new book *Against Plagiarism* (Zhang, 2015), has already proposed systematic editorial workflows to treat different forms of plagiarism. We do not think we can do it better. Therefore we refer the readers to Chapter 10 of her book. The attitude behind those workflows is that plagiarism, even in its minor form, once detected, should always be corrected. The authors who commit plagiarism would certainly become educated once they go through those workflows.

Duplicate submission and republication in translation are often committed by China's student authors. Republication in translation is characterized as one form of plagiarism by Yue-hong ZHANG and is well discussed in the book *Against Plagiarism* (Zhang, 2015). Here we shall focus on duplicate submission. Almost all graduate students in China are required to publish a certain number of articles before they can get their degrees. Time for this is limited, so after finishing the writing, some students will submit the articles to two or more journals at the same time, wait for one journal to accept their papers, and then withdraw the submissions from the other ones. Such misconduct, though serious, seems hard to detect by a single editorial office. However, there is a possibility that the paper is sent to a same referee by two different journals. In addition, it is suggested to editors that they keep an eye out for certain abnormal withdrawals, by for example, doing a similarity check using iThenticate after couple of months. If these papers finally get published in other journals, the misconduct can easily be identified by tracking the submission date marked on the article. Duplicate submission is a deliberate misconduct thus should be reported and undoubtedly punished.

Our journals (*Journal of Zhejiang University-SCIENCE (A/B)/Frontiers of Information Technology & Electronic Engineering*) are the first in China to detect plagiarism using iThenticate. We have faced disagreement from many authors and even some editors. However, we persevere and insist on our procedures since to be against plagiarism is an international trend, and more and more international journals are using iThenticate to detect plagiarism. The new generation of Chinese authors should be prepared for this. The suggestions we have made in this section, though proposed in the name of postgraduate education, actually will benefit the journals themselves in

the long run. The emotional attachment to a journal from its author group is certainly an invisible treasure.

Compliance with ethics guidelines

Chun-jie ZHANG and Yuan ZHU declare that they have no conflict of interest.

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中文概要

题目: 研究生科技论文写作及文章发表扩展教育

概要: 本文从分析国内研究生的学术论文发表现状及存在的一些普遍性问题出发, 指出对我国研究生进行科技论文写作及文章投稿发表这两方面扩展教育的必要性, 同时基于文章两位作者在实际研究生培养、管理及学术期刊中的实践, 提出从管理者、导师及学术期刊三个层面协同开展此类扩展教育的一些建议。

关键词: 研究生教育; 科学写作; 文章发表; 学术不端