Chapter 20

The International Journal of Science and Mathematics Education: **A Beginner's Guide to Writing for Publication**

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Abstract Three hundred manuscripts on mathematics education are submitted for review to the International Journal of Science and Mathematics Education (IJSME) every year. The vast majority of these are rejected. In many cases, manuscripts that are being rejected are based on good research on interesting topics, but are being rejected because the author has failed to articulate his or her work in ways that reviewers and editors find appealing. This chapter looks closely at what constitutes a good paper and offers guidance for early researchers on how to write for publication in IJSME.

Keywords Mathematics education • IJSME • Good writing • Publication

20.1 Introduction

Since 2015 IJSME has received well over 1000 submissions from authors in the field of mathematics education. The vast majority of these are rejected, with most years IJSME having rejection rates upwards of 80%. Although there are many reasons why a manuscript may be rejected, the three most common are poor research, uninteresting results, and poor writing. Poor research refers to manuscripts reporting on results that were gathered through a methodology that either does not look deeply enough into a phenomenon of interest, is missing a theoretical framework to analyze the data, uses an inappropriate or ineffective theoretical framework, ignores prior work on the topic, or is unethical or disrespectful of its participants. If the manuscript is constructed on a foundation of rich data and the issue was only theoretical in nature, then a new manuscript involving complete re-analysis may be possible. Otherwise, very little can be done to salvage poor research into publishable content.

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© The Author(s) 2019
G. Kaiser and N. Presmeg (eds.), *Compendium for Early Career Researchers in Mathematics Education*, ICME-13 Monographs,
https://doi.org/10.1007/978-3-030-15636-7_20

Manuscripts that are deemed to be uninteresting tend to either answer questions that are uninteresting to the field or produce results that are redundant with research already published in the field. The first of these, uninteresting questions, are most often the result of too much specificity. Redundant research results can either be the result of looking at a known phenomenon from a slightly different perspective or using an existing research method in a slightly different context. This is not to say that such research should not be done, but rather that if all that is accomplished from doing such research is to confirm prior results then not much has been added to the knowledge of the field. Such research is rarely salvageable as it is most likely built on a data set that does not have the depth or breadth to produce more interesting results.

The third reason why manuscripts are rejected is where, in my opinion, the real tragedy lies. These are manuscripts that result from solid methodologies designed on interesting research questions and built on a foundation of rich data. What is preventing these manuscripts from being published is poor writing. In this chapter I look closely at this phenomenon and offer some basic tips for beginning researchers to think about how to write up their research for publication.

20.2 About IJSME

The International Journal of Science and Mathematics Education (IJSME) was founded in 2003 by Taiwan's Ministry of Science and Technology with the mandate to provide a venue for authors from non-English speaking countries to publish peer reviewed articles on a variety of topics in both science and mathematics education. This mandate is being realized with submissions from 60 different countries in the last four years (see Fig. 20.1) and publications from 46 countries in that same time period (see Fig. 20.2).

The founding editor-in-chief of the journal was Fou-Lai Lin from the National Taiwan Normal University. The current editor-in-chief is Huann-shyang Lin, National Sun Yat-sen University, Taiwan. In 2011 IJSME sought, and was granted, admission to the Social Science Citation Impact Factor. Since then, IJSME has seen a rapid growth in the number of submissions to the journal (see Fig. 20.3) and along with it, a growth in the rejection rate (see Fig. 20.4). Despite the increase in rejection rate of IJSME, the rapid increase in the number of submissions has required an increase in the absolute number of papers being accepted each year, and as a result a need to publish more articles per year.

Since entering the Thompson Reuters Index in 2011 IJSME has seen an overall increase in its impact factor year over year (see Fig. 20.5). The exception to this being 2017 where the increase in the number of articles published lowered the impact factor. Along with the increase in impact factor IJSME has enjoyed a rapid growth in the number of article downloads per year with 2018 projecting 140,000 downloads (see Fig. 20.6).

Fig. 20.1 Submissions by country since 2015 (n = 2194)

In addition to publishing eight regular issues a year, IJSME has also published a special issue each year since 2010 (except 2012), on the following topics:

- 2017: STEM for the Future and the Future of STEM
- 2016: Metacognition for Science and Mathematics Learning in Technology-Infused Learning Environments
- 2015: Video-Based Research on Teacher Expertise
- 2014: Neuroscience Perspectives for Science and Mathematics Learning in Technology-Enhanced Learning Environments
- 2013: International Perspectives on Mathematics and Science Teacher Education for the Future
- 2011: Enhancing the Participation, Engagement and Achievement of Young People in Science and Mathematics Education
- 2010: First Cycle of Pisa (2000–2006)—International Perspectives on Successes and Challenges: Research and Policy Directions

IJSME strives to focus these special issues on emerging, or recently emerged, trends in science and mathematics education as evidenced by the number of citations

Fig. 20.2 Acceptance by country since 2015 (n = 293)

each garner. In fact, the special issues from 2013, 2014, and 2015 contains some of the most cited articles in IJSME history and speak to the currency of the content.

20.3 The Emergence of Patterns

As a senior editor of IJSME since 2013 I have overseen over 600 manuscripts, sending them out for review and making final decisions when the reviews come back. In this capacity I have read well over 2000 reviews. Through my interactions with these 600 manuscripts and 2000 reviews, patterns have emerged. First to emerge were patterns of what makes a poor manuscript—a manuscript that reviewers are likely to reject and why. These patterns were the basis of my aforementioned three reasons for a manuscript being rejected—poor research, uninteresting results, and poor writing. More slow to emerge, and more difficult to discern, were patterns for what made a manuscript good. The reason for this is that while there are three main ways for a manuscript to be deemed poor, there are many different ways for a manuscript to be considered good.

Fig. 20.3 Total submissions per year since 2011

Fig. 20.4 Rejection rate per year since 2011

Fig. 20.5 Impact factor per year since 2011

Fig. 20.6 Downloads per year since 2011

Before I talk about these patterns, I want to be clear that this is not a scientifically rigorous study. I did not begin with a research question, or design a methodology, or engage in prior literature. The question as to what makes a good manuscript emerged naturally out of my many and varied interactions with manuscripts over the years, and the patterns were reified in my work of trying to guide my graduate students in their writing of conference papers, journal articles, and their theses. Having said that, there was a method to the emergence of the framework that I

present below. First and foremost, this method has been guided by noticing others' writing and how reviewers respond to that writing. At the same time, I was also noticing my own writing and how this was being informed by others' writing and how reviewers responded to it.

20.4 Structure for a Good Paper

What emerged from this lived experience was the observation that an article¹ is a story. And like a story it has a discernable beginning, middle, and end. And as with stories, there are many ways to write an article. There can be foreshadowing, detours into related events, and reflections on past events. There is a development of tension and eventual resolution, and there is a deliberate effort to bring the reader into the complexity of the plot and themes through threads that are engaging and inviting. And there are considerations of voice and audience. How these elements are structured determines how well a story is told and how well it is received. The same is true of an article.

Good papers are a telling of the research that is being presented. The authors of such papers have found an engaging and inviting way to gradually pull the reader into the complexity and nuance of the research while building the tension that the research question will resolve, all the while using voice and consideration of audience as they guide the reader from the introduction to the conclusion. Although there are many ways to do this, all good papers have these elements. What follows is a reification of one way for an author to tell the story of their research.

Before I share this, however, it is important to recognize that this is but one way. What follows is not to be thought of as a panacea of how to write for publication. It is not to be used as a checklist for reviewing manuscripts, or as a criterion for soliciting manuscripts. This is a place to start, a way to write for publication that may help a beginning researcher to think more clearly about the story he or she is trying to tell.

In what follows I move through the various elements of a paper, from the title to the conclusion with discussion and elaboration of each element and how it can be structured so as to tell the story effectively. Whenever possible I provide examples—both good and bad—to illustrate some of the more nuanced aspects that I discuss. What I do not do, however, is discuss how to perform good research. I do not discuss how to pick literature, how to select an appropriate methodology or how to choose a theoretical framework. What I am trying to do is to help future authors turn good research into a good manuscript and, in so doing, I make the assumption that good research has already been done.

¹Throughout this chapter I very deliberately refer to something that is submitted for review as a manuscript. Anything that has been published I refer to either as an article, paper, or chapter.

20.4.1 Title and Abstract

Our ability to search for relevant research has changed drastically in the last few decades. Fifty years ago we used a variety of indexes available in university libraries. Every few years journals published an index of every paper published in that journal for some period of time—1 year, 5 years, 10 years, etc. There was also an annual index of all PhD theses written. These indexes were most often organized by title, but sometimes also by topic—as articulated in the title. Searching through these indexes involved the reading of many titles and, as such, what the title was became vital. Over time, some of these indexes began to include abstracts, which provided much more detail, but were more tedious to read and searching became a two part process—first by title and then by abstract. In this era both the title and the abstract were vital for providing access to what the research contained.

Now, in 2018, search engines such as Google Scholar, Scopus, Web of Science, ERIC, etc. are able to search the entire text of a document, returning a focused list of relevant papers, chapters, and reports. This list, as in the past, is still comprised of titles and abstracts, but because these no longer serve as the only gateway into the research the role of the title has changed. Whereas a title previously needed to include every dimension of the research, these dimensions can now be searched for directly, allowing titles to be more concisely focused on the object of study rather than on how the study was done. For example, *The Elusive Slope* (Lingefjård and Farahani 2018) identifies the object of study (slope) and implies that it may be about student difficulty around this concept. However, which students and which context are opaque. Fifty years ago, the title of this article might have been something like *Upper Secondary Students Difficulties with Interpreting Distance-Time Graphs and ECG Graphs*. Although an extreme case, the point is that there is no longer a need to include every dimension of the research in the title. So, while *Tool Use and the Development of the Function Concept: From Repeated Calculations to Functional Thinking* (Doorman et al. 2012) is now an appropriate title, 50 years ago the title may have been something more like *Secondary School Students Development of the Concept of Function in a Technology-Intensive Setting*.

This is not to say that anything goes with a title. The title should still be on point, and should still reveal some specific details about the content of the article (slope, functions, etc.). However, keep in mind that the more detailed the title, the more narrow the potential interest in the paper. So, whereas someone might be interested in *Learning to Think Spatially: What do Students ‘See’ in Numeracy Test Items?* (Diezmann and Lowrie 2012) because they have an interest in spatial thinking, posing the title as *Year 3 Students’ Spatial Thinking on Items 1 and 22 of the 2008 Australian NAPLAN Test*, has narrowed that potential interest to a very specific subset of topics in spatial reasoning. Of course, this is an exaggerated extreme of how overly specific a title can be, but it does highlight many of the errors I often see in how a title has been selected.

First, the title specifies the country within which this research has been done. All research is done somewhere. Unless the research is an international comparison, there is no need to specify the country—it unnecessarily narrows the scope of potential interest in the manuscript. The same is true of the age group of the participants and the instruments used to gather the data. In short, the title should not include anything from the methodology (except possibly the theoretical framework—if well known). If the research cannot say something that transcends the country in which it is done, or who the participants are, or the instrument used, then it is likely not of interest to an international audience. The aforementioned fictional title on year 3 students' performance on a NAPLAN test sounds as if it is better suited as a national or regional report than as a journal paper in an international research journal—irrespective of what the content is.

When thinking about how to craft an abstract, a different set of parameters needs to be considered. The most common error I see with abstracts is that they are written for an audience who has read the paper. This is the wrong audience. The abstract is read, if at all, prior to reading the paper—and sometimes instead of reading the paper. The reader is not yet aware of the technical terminology that is carefully developed within the manuscript as the author educates the reader. As such, the abstract needs to be written using lay terminology and taken-as-shared concepts that can stand on their own without the weight of 40 pages of text to make sense of it. Further to this point, an abstract should not contain any references. Not only does this imply that specific knowledge is needed, it creates a space where a reference is indicated without an accompanying reference list.

This principle also extends to the considerations of how much of the results to reveal. The results of research, as presented in a journal paper, require the full weight of past literature, theory, and analysis to make sense of. Thus, to think that a specific result can be sensibly understood in an abstract is absurd. For example, whereas “*results indicate that students' dispositions towards mathematics improved*” is a reasonable statement in an abstract, a statement such as “*there was a general shift away from instrumentalist and Platonist views of mathematics*” relies too much on the specific terminology introduced later in the manuscript.

20.4.2 *Introduction*

What brings a reader to a specific article varies from a search engine result, to browsing a journal, to following a thread of references from a different article, to a random occurrence—none of which guarantees that the reader has an a priori interest in the article. Thus, the purpose of the introduction is not so much to introduce the reader to the *phenomenon of interest* but rather to inform them why the phenomenon of interest is, in fact, interesting.

The primary way to do this is, first and foremost, to write a manuscript about an interesting and important topic. This point cannot be overstated. The number of manuscripts that are rejected because the topic is either uninteresting or redundant is

staggering. Reviewers and editors at IJSME tend to be quick to point out if a manuscript, irrespective of how technically well it is written, does not significantly contribute to the knowledge of the field. However, an interesting and important topic, although necessary, is far from sufficient. The author must also tell the reader why they should care about this topic. That is, it is not the reader's job to determine if the research presented in a manuscript is either interesting or important—it is the job of the author.

Although not universal, an effective way to do this is to first identify the phenomenon from literature, data, a personal experience, or a taken-as-shared experience—*some students have the goal to learn while other students have the goal to get good grades*. Once the phenomenon has been introduced the author needs to then argue for why this is an important phenomenon for the field of mathematics education in general—*we don't know enough about how these varying goals affect student behavior in the mathematics classroom*—or mathematics education research in particular—*this calls into question the assumption that in a didactic contract the teacher and the students have a common goal*.

Regardless, this structure segues perfectly into a general and lay statement of the research question—*in what follows I explore these varying goals and the impact they have on student learning behavior*. In doing so, the author has successfully narrowed the phenomenon of interest down to a research question. As with the abstract, however, the statement of the research question needs to be accessible to a reader who has not yet learned the nuances that the literature review and discussion of theory has yet to present. As such, overly technical language should be avoided.

20.4.3 Literature Review

The most common misconception that I see in rejected manuscripts is that the purpose of the literature review is to showcase that you have read prior and related research on your phenomenon of interest. The result of this misconception is a parade of summaries of past literature, sometimes (but not always) using some organizational heuristic such as time or demographic. Although it is important that the author be aware of the related research, this is not the purpose of a literature review.

I find it best to think of a literature review as the place where the author is going to continue to narrow their phenomenon of interest down to their precise research question. Thus, the literature review is not a random walk through the literature, but a guided tour of the literature, constructed in such a way so as to direct the reader's attention and interest towards the research question.² If done well, when the

²I write this chapter as though a paper has a single research question. This is for convenience sake and is not a recommendation to authors. Papers often have multiple research questions.

research question is posed the reader will say, “*of course that is the research question*”.

Consider the analogy of giving a tour of your city to a visitor from out of town. This tour can either be a drive through your city pointing out every major landmark or it can be a carefully selected tour wherein you point out the historical and cultural relevance of selected landmarks so as to try to imprint on your guest what it is that makes your city unique and interesting. Too many literature reviews are the former type of tour. It is uninteresting and uninformative, and it is especially boring for the visitor who has already been to your city many times and has visited these landmarks many times over. In many instances the reader of a paper is aware of much of the research being cited. He or she does not need to be introduced to it again. What is needed is to see how you are positioning and vectoring this literature to reveal the gaps or hidden corners that your research is hoping to respectively fill or illuminate.

Thus, the most natural place for the research question to appear is at the end of the literature review. Not only does this complete the tour by providing the last bit of narrowing from the phenomenon of interest, it also creates a natural segue to the methodology section. Unlike the general and lay posing of your research question in the introduction, however, the reader now has the technical language and terminology along with the nuanced understanding of the field to understand the articulation of the research question in its full complexity and subtlety. As mentioned, such a research question should clearly articulate how the results to follow will either fill a gap or illuminate a dark corner in the research literature. This can be done in a number of different ways, from applying existing theories to a new context, to looking at a phenomenon of interest through a new lens.

Regardless, the research question should be posed in such a way that it cannot be answered with a yes or no response. For example, the research question *Does cognitively guided instruction improve students' learning experiences?* hints at a complex and rich research project with intricate methodologies and deep data analysis, all of which are overshadowed by the drive to answer the question. A better research question may have been, *In what ways does cognitively guided instruction affect students' learning experiences?*

Aside from this important focusing of the phenomenon of interest to a research question, the literature review also serves to introduce the reader to the technical vocabulary and terminology that will be used to discuss the analysis and results. In this regard, the literature review should also introduce the reader to the theoretical or analytic framework that will be used in the forthcoming analysis of the data. However, the fact that a subset of the literature being presented will be the theoretical framework does not necessarily need to be revealed at this time. It can be, but that reveal can also be made within the methodology section. For now, the theory can just be another stop on the guided tour through the literature.

20.4.4 Methodology

There was a time when the primary role of the methodology section was to provide the details so that the research could be recreated by another researcher. In many ways this is still true. However, the methodology section has also come to serve an additional and, although implicit, important purpose—to help readers see how the results of the research can explain a phenomenon within their own setting. This is not to say that the job of the methodology is to make the results generalizable to any context or to say that it is the author's job to identify the specific contexts to which the results can generalize to. Rather, it is the job of the author to identify the details of the contexts within which the research was done so that readers can perform this alignment themselves.

To these ends, the methodology needs to include the necessary information of where the research was performed, who the participants are, how the data were gathered, what the data are, and how the data were analyzed. The first two of these (where and who) need to have enough contextual detail for the reader to understand the demographic that this research is relevant to, without being so detailed that anonymity is compromised. How the data were gathered, should include detailed descriptions of the interview questions used or the survey instruments administered. It should also include a narrative of how and why these questions or instruments were constructed or selected.

There are three common errors made by authors on this last point—the first of which is to talk about their data gathering instruments as if the reader already knows what they are. Providing four and five letter acronyms does not help. Neither does placing the entirety of the instrument in the appendix. The author should be articulate about what the instrument is and how and why it was chosen within the body of the methodology section. This is not to say that an entire questionnaire should be inserted, but rather a sampling of the types of questions participants were asked to answer should be provided.

The second error is to introduce an instrument or method that has not been previously encountered in the literature review. If the literature review is vectored towards the research question as discussed above, then the methods used in the research will have already been encountered. As such, the appearance of an, as of yet undiscussed, method is a strong indicator of a poorly structured literature review.

The third mistake is that authors forget to discuss what the data are. To be clear, detailed descriptions of the methods of collecting data do not necessarily result in a clear understanding of what constitutes the data for the research to be presented. This is especially true when a research paper draws on only a subset of data from a broader research project.

The methodology should conclude with a clear articulation of how the aforementioned data were analyzed. This is where the author will identify (or re-identify) the theoretical or analytical framework that will be used as a lens to make sense of the data. The importance of this cannot be understated. The number one reason that

a manuscript is rejected is for the lack of a well-articulated or explicitly used theoretical or analytical framework. That is, whereas a complete absence of a framework is seen as intolerable by reviewers and editors, to state that a framework exists but then not use it in the analysis is no better. The same is true of introducing a framework with no prior grounding or discussion in the literature.

Further to this point, a lack of a theoretical or analytic framework can very rarely be compensated for by the trivial use of thematic analysis, constant comparative method, or grounded theory. In most cases, such methods are used where an abundance of literature and theory exists and could have been used to analyze the data in robust and rigorous ways. This is rarely tolerated, and only when the author acknowledges the existence of relevant literature and theory and has a well-articulated argument for why these are inappropriate for the purposes of answering the research question.

Having said that, depending on the level of detail provided in the literature review, the methodology section may require a more detailed exposition of what the framework is and how it will be used to analyze the data. Further, select the theoretical or analytic frameworks carefully. I often see authors using very elaborate and complex frameworks to see things that are obviously at on the surface of the data. The complexity of the framework should match, to some degree, the depth of the analysis and allow the author to see and discuss results that are not apparent without the framework.

20.4.5 *Results and Discussion*

Whereas in quantitative papers the results are often presented separately from discussion, in qualitative papers this is much less the case. The reason for this is that while quantitative results can be presented in the form of tables and graphs prior to discussion, qualitative results need to be discussed in order to situate them. This is not to say that qualitative results and discussion cannot be separated, but rather that it is difficult to present results without naturally sliding into the discussion. Having said that, there are some things to keep in mind when structuring the presentation and discussion of results.

First, the discussion of results is the best place to demonstrate how the theoretical or analytical framework is being explicitly used to analyze the data. Be transparent about this. From a reviewer's or editor's perspective there is no difference between not using a framework and using one in opaque ways. Second, use the structure of the framework to organize the discussion. Manuscripts are often rejected because the discussion is a dizzying and confusing walk through the results. The analogy of a guided tour is as relevant to the literature review as it is to the presentation and discussion of results. Often a framework comes with explicit visuals, tables, or headings that can be used to organize the discussion so as to guide the reader towards the conclusions. Without this, the conclusions risk being seemingly random outcomes of the research.

Further to this point, the detail around the results and analysis should be at a level so as to allow the reader to participate in the analysis and arrive at the conclusions with the author. Too often authors provide either too little or too much detail. Whereas too little detail leaves the reader having to take the word of the author that the analysis led to the conclusions, too much details bores the reader and often overshoots the conclusion—both of which will likely run afoul in the review process.

At the same time, the author needs to keep in mind that there is a difference between doing research and writing research. Whereas doing research happens in time, time is often a poor organizer of the results and discussion. The presentation of results and discussion should focus much more on the *logical* portion of chronological than the *chrono* part. As part of this, the author should take care to think ahead to how the discussion is going to contribute to the answering of the research question.

With respect to tables and graphs, authors need to be mindful of why and how they are using them. There are two main uses of tables and graphs in a research paper—to summarize results and to organize results. The first of these is often used early on in the section to present all, or a portion, of the results in a clear and concise way. This clarity is obfuscated if the tables or graphs are not well labelled and the conciseness is compromised if the author presents the table or graph and then proceeds to painstakingly narrate every entry. This is not to say that individual pieces of the table or graph cannot be discussed or elaborated on to give depth of meaning. But efforts should be made to allow the tables and graphs to speak for themselves.

The second way in which tables and graphs are used is to summarize results that have been presented and discussed. In this use, tables and graphs often come near the end of the section as they pull together the discussion that has preceded them. In this use, elaborations of tables and graphs should be used only for the purpose of directing the reader to intricacies in the organization and not to the substance of the graph or table.

20.4.6 Conclusion

Whereas the beginning of a paper is focused on narrowing the scope of the research from the phenomenon of interest, through the use of literature, down to the research question, the conclusion reverses this process as it moves the research from the specificity of the results and discussion back towards the phenomenon of interest. As such, and although it is seen as one section of a journal article, the conclusion actually serves four purposes—the first two of which are to answer the research question and to present any other results from the research. As mentioned in the previous section, the answering of the research question begins already during the discussion of results. This is a delicate formulation and care should be taken in

Fig. 20.7 Mapping the discussion onto the conclusion

doing it well. The analog of a functions that maps the discussion onto the conclusion becomes a useful structure for thinking about this (see Fig. 20.7).

In such a mapping there are important rules to pay attention to. The first is that there exists no part of the discussion that is not present in the conclusion. That is, everything that is discussed about the results must either contribute to answering the research question or be mentioned as part of other results emerging from the research. The second rule is that no one discussion point should answer the whole of the research question. Not only does this make the conclusion redundant, but it also calls into question either the appropriateness of the research question or the depth of the methodology and theoretical or analytical framework used in answering the research question. A final rule is that there should be many more discussion points that contribute to answering the research question than do not. Otherwise it signals a mismatch between the research question and the methodology.

The third purpose of the conclusions is to speak back to the literature presented throughout the paper and talk about the ways in which the results of the research confirm, refute, extend, or nuance the existing literature. This is the primary way in which the author can validate to the reader that the research was, indeed, interesting. This speaking back to the literature is also how the research results are lifted from the specificity of the context and reach out to touch on more general areas of mathematics education.

The final purpose of the conclusion is to speak back to the phenomenon of interest and comment on how the research results contributed in some way to resolving or understanding that phenomenon. Whereas the research question sits at the bottom of the funnel that has been narrowed and refined by the literature review, the phenomenon of interest sits at the top of this same funnel. As such, the answer to the research question, which the research is fundamentally about, does not illuminate the whole of the phenomenon of interest. But it does illuminate part of it. The conclusion should end with some statements about this.

20.5 Final Words

Pulling all of these thoughts together, we can think of a reader's experience with an article as having an hour glass shape (see Fig. 20.8, and see also the structure presented in Chap. 16 of this volume, in Sect. 16.2.3). The paper starts out broadly

Fig. 20.8 The structure of a paper

with an engaging title that invites a wide range of interests. Through the introduction and literature review the article is narrowed towards the research question, which finishes the funneling of the interest down to a very precise statement that will define the research work to come. The methodology, results, and discussion define this middle part of the hour glass remaining within the precise boundaries defined by the research question and the methodology. As the reader enters the conclusion the article starts to broaden out again, first by answering the research question and then by speaking back to the literature and the phenomenon of interest that initiated the research to begin with.

Of course, the visual in Fig. 20.8 is completely disproportionate in scale to the time spent within various phases of the research as well as within the various parts of an article. But the image creates a certain symmetry between the way an article should begin and end and provides a useful metaphor for authors to think about how to write up their research.

This same framework is not only relevant to the writing of a 30–40 page journal paper, however. This is the same structure I use with my graduate students when they are outlining and writing their theses. It is also a relevant framework for writing shorter articles, such as conference papers.

As mentioned in the introductory sections of this chapter, absent from the aforementioned discussion is any treatment of how an author should think about selecting his or her theoretical or analytic framework, as well as how to select a commensurate research methodology, both of which are important aspects of the doing the research and should be treated with great care and anticipation. Although this chapter begins at the point where the research has been done and the writing up of the research for publication is about to begin, there are other aspects of the

writing for publication in IJSME that I have not mentioned, one of which is the technical requirements of IJSME.

IJSME has some technical requirements for authors to follow when submitting manuscripts. Although there is not a template to follow authors are expected to follow a style guide which specifies page limits, heading levels, font size, margins, spacing, and referencing style. Authors need to pay close attention to these parameters when writing and submitting a manuscript. Ignoring such requirement may, at worst, be grounds for rejection and, at best, annoy the editor and reviewers.

A specific part of these parameters to pay attention to is what is referred to as the meta-data. These are the details that you are asked to enter into fields during the submission process and include your name, affiliation, title of the paper, and the abstract. The meta-data are used, along with your manuscript, to produce the document that is seen by the editor and sent to the reviewers, and has important implications for how your manuscript is tracked within the digital submission and review system as well as how it is blinded for review. Again, careful attention to these requirements is needed.

Also absent from the above discussion about different parts of an article is any mention of references. IJSME has specific criteria for how referencing is to be done and how the reference list is to be organized. The APA format forms the basis of this criterion, but careful attention to the slight variations of this format that IJSME uses is needed. Thus, cutting and pasting references from one paper to another will not work unless careful editing follows.

Finally, I want to go back to how the paper began by stating, once again, that what I have offered here is a set of guidelines for authors looking for advice on how to write for publication in IJSME. These guidelines have emerged, as stated, from looking at hundreds of submissions and thousands of reviews. These guidelines are neither inflexible nor criteria. They are a starting point, a place for a beginning researcher to begin to think about how to output a good research publication.

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