PUBLISHING FOR YOUNG WATER PROFESSIONALS

Gustaf Olsson | Ashton Maherry

WATER RESEARCH COMMISSION

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WELCOME!

PREFACE

This guideline is the product of the Young Water Professionals (YWP) Publication Workshop Series. The content has been developed based on the YWP Publications Workshops previously conducted in Malaysia and South Africa. The workshops have been organised by the International Water Association (IWA)-YWP National Chapters, in cooperation with IWA and the Water Institute of Southern Africa (WISA), supported by the Water Research Commission (WRC) in South Africa and Universiti Teknologi Malaysia (UTM).

The workshops highlighted a need for publication guidelines for the YWPs. The contents of this book aim to advise and guide YWPs towards successful publication of their papers. The authors have done their best to create a comprehensive yet easy-to-read guideline, and acknowledge that the materials presented are based on personal experiences in publishing in journals and as a journal editor-in-chief. Even if the guideline is followed to the letter, the authors cannot guarantee that your paper will be accepted for publishing. However, we can guarantee that you can rely on us, and the YWP network, to assist you in improving your manuscript to increase the chance of publication. Although the guideline was developed for the YWPs, it can be applied to different disciplines for young and senior professionals.
The publication workshops started with short seminars on publication. Professor Gustaf Olsson, as the editor-in-chief of Water Science and Technology, was invited to give the first series of publication seminars in China in 2006. As a guest professor at the Tsinghua University in Beijing and at Universiti Teknologi Malaysia (UTM), Malaysia, he was invited to give publication seminars every year following 2006. Seminars were also arranged at several European universities. In 2011, at the 3rd IWA Development Congress and Exhibition in Kuala Lumpur, the IWA publishing team arranged a special meeting to discuss publication strategies. Professor Ir Dr Zaini Ujang, then the Vice Chancellor of UTM, proposed a series of five-day publication workshops to be held at UTM in cooperation with IWA. UTM provided the Water Scholarship for the first cohort of 30 participants worldwide. The IWA President, Professor Helmut Kroiss, who was also the editor-in-chief of Water, Science and Technology, and Professor Gustaf Olsson, were key facilitators during the workshop series at UTM Malaysia between 2011 and 2016. The first series of three workshops in South Africa was conducted in January 2014 followed by a second series of three workshops in August 2016.

As a result of increasing pressure to publish, the interest in guidelines for publication has grown dramatically in the international water community, particularly among YWPs. Therefore, this publication guideline aims to provide a freely available and easy-to-read guide to help young writers as well as anyone working in academia in producing publishable manuscripts.

Gustaf Olsson and Ashton Maherry
Authors


ON THE WAY TO SUCCESS

MESSAGE FROM IWA

This booklet is the result of an amazing history which started in Kuala Lumpur on the occasion of the second IWA Development Congress in Kuala Lumpur in 2011. The IWA publication committee, chaired by Michael Dunn and by me as a member from the IWA Board, gathered some colleagues from universities to join us for a meeting at the Congress. The aim was to discuss how IWA in general and how IWA Publishing (IWAP) can contribute to enhancing the careers of young scientists worldwide. During our discussion in a group of about six persons, the idea came up that one of the main causes for rejection of mainly young authors' papers is the insufficient quality of the papers, caused by lack of knowledge and expertise both by themselves and by their supervisors regarding the quality criteria for the review process. The discussion ended with the statement that there is a need to educate young water professionals as to how to write a scientific paper, as publication success is increasingly relevant for their careers, at least in academia.

I will never forget when Prof Zaini Ujang, at that time Vice Chancellor of Universiti Teknologi Malaysia (UTM) at Johor Bahru, made the spontaneous unbelievable suggestion to make the first "publication workshop" happen at UTM in Johor Bahru with organizational support and generous financial support by the University. This was the starting point of great activity in IWA and UTM which resulted in the first "publication workshop" in Johor Bahru in March 2012. Prof Zaini Ujang not only provided the financial support for the participants but also installed Norhayati Abdullah, Senior Lecturer at the Faculty of Biosciences and Medical Engineering, as programme coordinator. Norhayati and her excellent team organized this first workshop and following workshops at a very high professional level. Even this was something which had to be invented. For the scientific content there was, of course, strong support from Prof Zaini and Prof Zulkifli and others at UTM and from Gustaf Olsson as the main workshop leader. The IWA secretariat helped mainly in attracting YWPs from all over the world. The extraordinary success of this first workshop was strongly supported by the warm atmosphere created by Norhayati and her team: a combination of a perfect organization and an amazing social programme which resulted in the transformation of about 40 persons – young researchers, lecturers and professors from all over the world – into a great "family".

Gustaf, the main author of the slides and responsible for the programme, and I, as co-moderator of the workshop, were continuously learning during this week and we were amazed at the progress the YWPs made from Monday to Friday. Progress could be monitored by the improvement in the participants' presentations of their work from the beginning to the end of the week, the improvements in their draft publication, in the increasing glow in the participants'

eyes and from the cheerfulness of their communication.

Those of you who will read the following pages in order to increase the quality of your scientific paper can learn from the history above that the goal of publication is improved communication in the scientific community, which has two basic aspects: one is sound scientific methodology but the second is a human aspect – publishing needs a dedicated human environment to which authors have to adapt and contribute in order to avoid friction. In many cases a new initiative is often catalysed by the power, will and ability of one personality. As a reader of these guidelines you should never forget that you can be such a personality in your career.

Helmut Kroiss
IWA past president

MESSAGE FROM YWP

It is with great pride that the South African Young Water Professionals (YWP-ZA) presents this publications handbook.

The YWP-ZA National Publication Roadshows, hosted in 2014 and 2016, were organized by YWP-ZA with the financial support of the South African Department of Science and Technology and the WRC. The aim of these roadshows was to address the gaps in publication skills and effectively take the voice of young professionals to the world by allowing them to become published writers. The importance of this handbook for YWPs cannot be overstated: young voices deserve to be, and indeed must be, heard in the academic world, whether from Africa, Asia or North America.

For me, this handbook represents the essence of what the YWP programme is all about. The programme builds the capacity of both the organisers and participants which is what this handbook also sets out to achieve. It was created through inter-generational (and international) collaboration to create a quality product, with direct inputs from the renowned expert in the field of publication development, Prof Gustaf Olsson, and the first-hand experience of young professionals and students who struggle to publish. The handbook is founded on experiences from workshops held in South Africa and Malaysia, which extrapolated such local experiences to create a globally applicable product. It was driven by YWP volunteers for YWPs because they wanted to make an impact that is larger than themselves.

The volunteer spirit which created this handbook is remarkable. As with all YWP activities, not one individual was remunerated for their contribution and their time freely given. This demonstrates what a committed group of volunteers can achieve and the difference they can make. I am proud of this product; it embodies a group spirit I am proud to count myself a part of. The South African National Committee has worked hard with our partners (IWA, WRC and WISA) to make this handbook a reality and, while all products are a group effort, Ashton Maherry, Stuart Woolley and Prof Gustaf Olsson deserve special mention. This would not have been possible without them.

Finally, I hope this guideline will be of use to many aspiring young water researchers!

Nora Hanke-Louw
National Chairperson, 2016–2018, YWP-ZA


THANK
YOU!

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The South African Department of Science and Technology, for funding the First YWP-ZA Publication Workshop series in 2014.

Universiti Teknologi Malaysia, via collaborations with IWA and the Malaysia YWP National Chapter under the auspices of the Malaysian Water Association (MWA), for the organization and provisional funding of the IWA-UTM International Publication Workshop Series, in particular Dato' Seri Ir Dr Zaini Ujang (former UTM Vice Chancellor, now Secretary General, Ministry of Energy, Green Technology and Water, Malaysia). The programme planning for the UTM workshops was chaired by Prof. Dr. Zulkifli Yusop. Dr. Norhayati Abdullah not only coordinated the courses but, as the member of the IWA-YWP steering committee and its chair in 2014–2016, she has been a true champion to make young professionals aware of the need for these courses.

Professor Helmut Kroiss, for sharing his deep knowledge and wide experience at the IWA-UTM International Publication Workshops, 2011–2016, Dr. Tamsyn Sherwill (editor of Water SA), and Dr. Tobias Barnard (University of Johannesburg) for assisting and facilitating the lectures in South Africa.

The South African Young Water Professionals, for their organizing of the 1st and 2nd YWP-ZA Publications Workshop Roadshow.

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The International Water Association and the Water Institute of Southern Africa for their encouragement and support.

All the facilitators that made the workshops successful.

All the workshop attendees who helped shaped this guideline.

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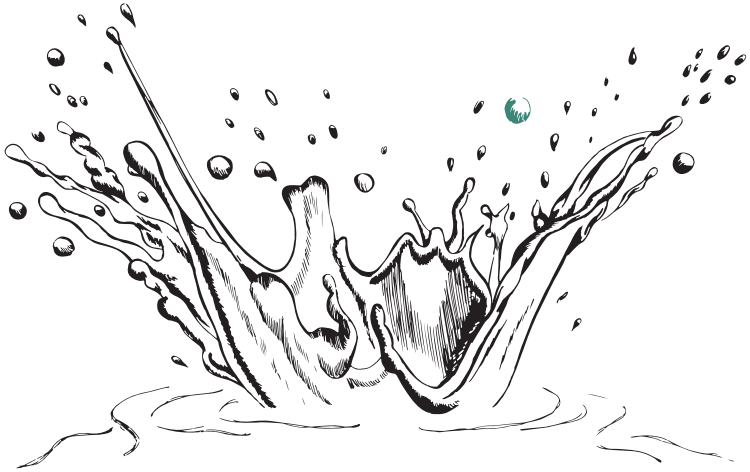
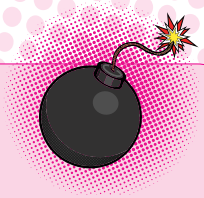
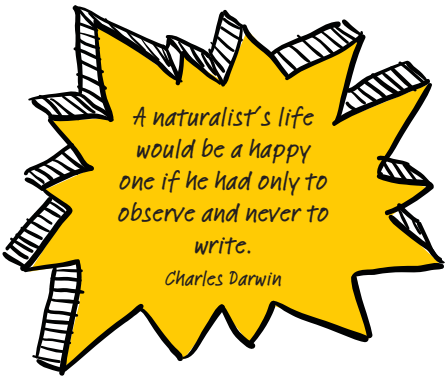


WHY PUBLISH?



- Publishing is the crucial quality test!
- It is the condition for open research
- You will become known
- You meet other researchers and can compare results
- You do not buy knowledge - you exchange it!
- You build up a network of colleagues

Journals remain important custodians of scientific endeavour, advancement, and credibility. As a result, **"publish or perish"** is indeed a quip that is well known in academic circles. Publishing is crucial to increase the impact of your work. If your research is not published in a journal or presented at a well-known conference, it simply does not exist! Researchers must be able to find your research and the peer review process that journals use ensures the credibility of your research. Research which has not been peer reviewed has no indicator of scientific rigour or quality. Thus, it must be possible to find your peer-reviewed research.



Your published paper becomes your certificate of expertise that lasts your entire career. Your first published paper is your entry to the world of research, and the first paper you write as lead author proves your leadership ability and that you can confidently stand alone as a researcher.

To successfully reach and influence your target audiences requires careful planning of both the writing and publication processes so that your papers are not only read, but **understood**, and found **meaningful** and **influential** by the readers.

Should you wish to embark on a career in research you will be required to publish often and in high-impact journals. Academics are evaluated based on number of publications, impact factor of the journals where their articles have been published, and how often each article has been cited. Other researchers referencing your research is an indicator of the impact that your work has. It is often better to have an article in a low-impact journal with many citations than an article in a high-impact journal which is

never cited. The trifecta for any researcher is to **successfully publish**, to publish in a **high-impact journal** and to have that article **cited frequently**.

> Writing is easy. All you do is stare at a blank sheet of paper until drops of blood form on your forehead.
>
> Gene Fowler


Keeping your
reader
in mind is key!

COMMUNICATE - WITH WHOM?

WHAT IS YOUR VISION?

Your vision is the purpose and the reason that you write. Academic wisdom is "publish or perish", but real wisdom is "where there is no vision, the people perish" (Proverbs 29:18). Especially in the water sector we publish our research to provide safe drinking water and save people's lives. Remember your vision!

WHO IS YOUR READER?

Before you start writing you should identify your reader. The reader is not someone who will just read your research, but someone whom you wish to influence and inform. The key message will determine who your reader is. The journal you select will depend on the reader. Do you wish to target a specialist audience, a wider audience or an interdisciplinary audience? The audience should influence your style of writing.

WHAT MAKES YOU READ A PAPER?

Title: The title is the first part of your paper which catches the readers' eye, so you need to make sure it is informative and catchy. Ask a friend, not your closest colleague, if the title can be understood.

Abstract and Introduction: The abstract is read next to identify the message of your paper. From the introduction, the reader should be able to determine why the paper was written and the context of your research. Ask yourself if a non-specialist can understand the reason for your paper.

Figures: The figures need to be informative and clear. Write a caption for each figure which clearly explains what the figure is about.

Conclusion: The conclusion needs to restate the key message of your paper. Ask yourself if your sponsor or manager would be happy with the conclusion of your research.

After the first glance - do you wish to continue reading the paper?

START WRITING!

After you have determined your vision and identified your reader, the next step is to start writing. While a journey of a thousand miles begins with a single step, a paper begins with a skeleton outline, after which you add the meat to the bones.

SKELETON OUTLINE

We recommend that you start with a skeleton outline of the paper before you start writing full sentences. The skeleton outline should be written in bullet or point form and must clearly state the following:

- Central message
- Key points
- Key outcomes

What is the central message of your paper? Spend time on this as it will pay off in the long run.

1. Develop the central message of the manuscript
   - Use 20–25 words
2. Define the materials and methods
   - The methods you used to carry out the study
3. Summarise the question(s) and problem(s)
   - What was known before you started the study?
   - List the key points
   - What did you do to answer the question(s)?

Exercise:

1. Write down three central points of your paper
2. Summarise your paper in one sentence
3. Describe your work to a colleague in one minute
4. Why was the work done?

Once you have worked on your skeleton outline, the next step is to take it to your supervisor and/or co-authors to review before you start writing any text. Only once you have a consensus with your supervisor and/or co-authors on your skeleton outline, should you begin writing and adding "meat to the bones".

ORDER OF WRITING

When writing, you will be required to do **many iterations** of each section and the paper itself. You will be required to revise and revise continuously. Often the published paper will have very little resemblance to your first draft as it is revised and improved during the writing and reviewing process.

Beginning:

- Objective
- First outline of title
- First outline of introduction
- Your vision, possible conclusion

Continuously:

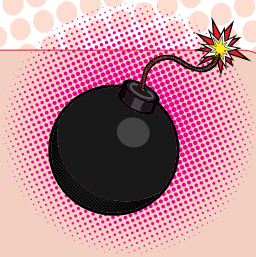
- Materials, methods, results, references

When the work is completed:

- Abstract
- Introduction (upgraded!)
- Conclusions, the message
- Logically derived from the results
- Final editing of the title

Firstly, you should focus on the objective of your manuscript, a first outline of the title and the first outline of the introduction. This can be written before you begin collecting your data for your research. You should include your vision and you might even be able to write your possible conclusion, although you must let the results guide your conclusion. During the data collection or experimentation part of your research you should continuously update the materials, methods, results and references. It is easier to do this during your research than to only start writing when all the experiments and research work has been completed. Once you have finished your experiments and collected all your data you can write the abstract, upgrade the introduction, write your conclusion with a focus on the message and ensure that is logically derived from the results. Once completed you should complete the final editing of the title.

Start with the introduction and conclusion and then finish with the introduction and conclusion



TIPS:

- Once you have finished your paper you must revise and revise… and revise
- Ask your colleagues to review your manuscript before you submit
- Look for an experienced writer to check the language and grammar
- Ask your friend or partner (who is not a specialist!) to read the introduction
- Revise again!
- Ensure that the introduction matches the conclusion
- Hypothesis and goals and vision should match the conclusion.

ROLE OF LEAD AUTHOR

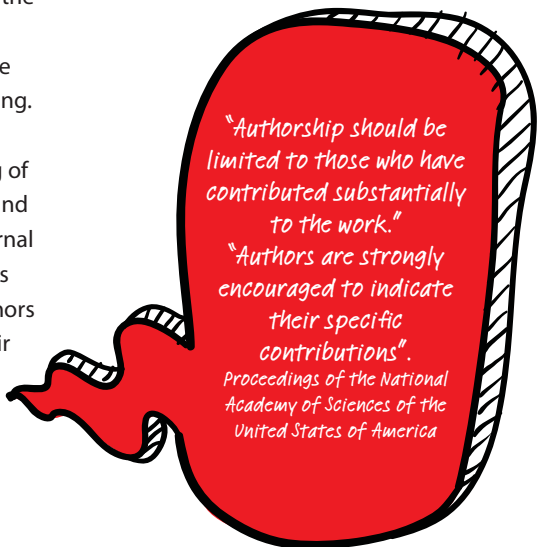
The lead author is the manager of the paper-writing process and does most of the work. The lead author assumes the main responsibility for the paper, including the work the paper is based on and the writing.

The lead author co-ordinates the writing of the paper, the submission of the paper and handles the review process with the journal editor. The lead author sets the deadlines and is responsible for reminding co-authors about the deadlines and submitting their contributions on time.

ROLE OF CO-AUTHORS

Co-authors typically participate in the experiments, model building or simulation. Co-authors provide ideas for the work and not just data. Co-authors contribute during the paper-writing phase and are responsible for writing sections of the paper and handling the reviewers' comments for those sections. Co-authors should continuously give feedback, specifically on the methodology, results, and discussion.

Co-authors are **responsible for the full paper**, not just for their section, and should be able to present and answer questions on the full paper.



WHO IS NOT A CO-AUTHOR?

Refer to the Acknowledgements section on page 37.

ROLE OF SUPERVISOR

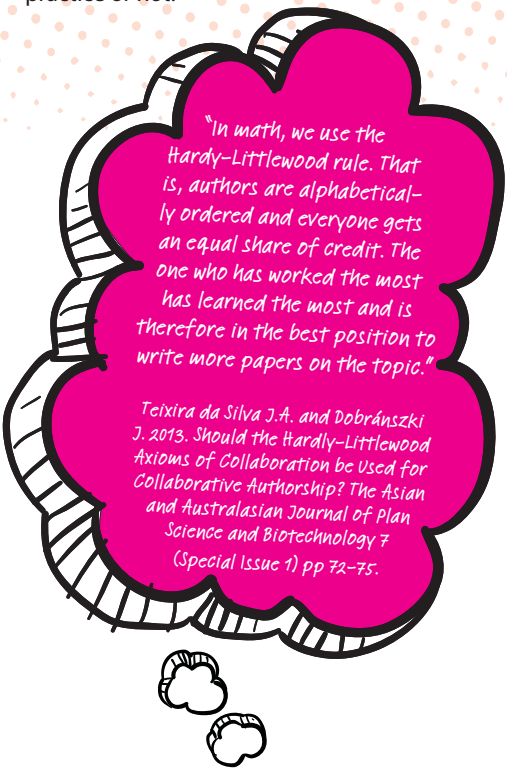
The supervisor's role is to provide ideas and give constructive feedback during the whole research process, and not just during the paper-writing phase.

A supervisor does not necessarily write sections of the paper, but guides the student on what to write and actively influences the content. The contribution must be significant in order to meet the requirements of a co-author.

ORDER OF AUTHORS

There is no **universal standard** on the order of authors for academic papers. The order of authors is different in different countries and disciplines. You should discuss the order of authors with your supervisor and co-authors at the start of the paper-writing phase, and be open about issues of co-authors and contributions. In the water sciences, we suggest that the lead author should be first. Thereafter, the authors can be listed in order of decreasing contribution or in alphabetical order.

In some disciplines, notably biology, the supervisor is placed last in the list. Discuss with your supervisor upfront as to what they require of their students, and speak to your colleagues to find out if this is common practice or not.



Order of authors:

1. Lead author first, and then in order of decreasing contribution to the paper
2. Lead author first, and then in alphabetical order

LANGUAGE AND STYLE

Communicating clearly is the goal of a written piece and this applies to any manuscript. If you want your work to have impact, then people need to understand it. Determine what you're trying to say before you start writing. Think in terms of an outline, and do not get lost in the details. Write direct sentences, and keep them simple and short, especially if you are not writing in your first language. Remain brief and organize your thoughts before you start writing.

TIPS

- Be sparing with adjectives and adverbs.
- Try to remove "very," "extremely," "highly". For example, try changing "a very good response" to "the expected response".
- Assuming you believe what you are about to say, just say it.
- Phrases such as "It is clear that" and "The fact is that" are empty verbiage.
- Look for omissions.
- Look for repetitions.
- Consider using synonyms.
- A thesaurus is very useful!
- Write as you would speak.
- Put the paper aside for a while.
- Edit, edit, edit…
- Use the spell checker!
- Do not trust the spell checker!

EFFECTIVE WORDS

Don't use	Better
Based on the fact that	Because
For the purpose of	For/to
Fact	Evidence
Prove	Support
Plays an important role	Is important because
Decreased number of	Fewer
Time period	Time
Longer time period	Longer
Brown in colour	Brown
Round in shape	Round
A number of	Some
Has been shown to be	Is
By means of	By
It is possible that	May
In order to	To
During the course of	During
A majority of	Most
A great number of times	Often
In other words	Thus/hence/therefore
Despite the fact that	Although
First of all	First
At this point in time	Now
Due to the fact that	Because
Employ, utilise	Use
High degree of accuracy	Accurate
In the event that	If
Prior to	Before
Subsequent to	After
It is interesting to note that	Eliminate!
It may seem reasonable to suppose that	Eliminate!
"novel", "first time", "first ever"	Be careful!

WHAT MAKES A SCIENTIFIC PAPER?

A scientific paper does not just require you to list results, but requires that you interpret them. This is done in a discussion section. Are the results expected? Is there anything that surprises you? Explain the results!

A REVIEW PAPER

A review paper is more than a literature review or a survey of literature. A review paper is an in-depth critical review that summarises the current state of understanding on a subject. It often requires an expert in the field to undertake a review.

Typically, literature reviews are a standalone chapter in a dissertation. Whilst literature reviews are important, your literature review should form part of the introduction to your paper and not a separate paper on its own. A journal is not likely to accept a masters or doctorate literature review for publication.

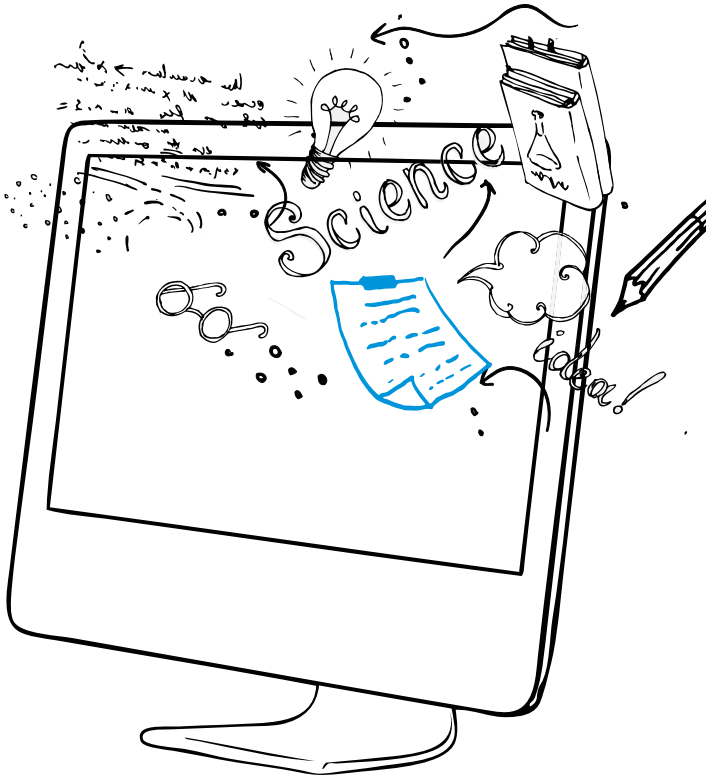
NOT ABOUT PERFECT ENGLISH

An academic paper is not about writing in perfect English, and the role of the reviewer is not to correct the language in the article but to review the content.

Literature reviews:
A journal is not likely to accept a masters or doctorate literature review for publication. You can save the editor's time and your time by incorporating your literature review into the introduction of your main paper.

WRITING TIPS

- From the beginning of the project or the thesis, write in simple English.
- For the first iteration just write down your ideas and do not worry about the style of the language!
- Write when your energy is high, and not when you are tired!
- References – having read a paper, write the reference directly and your critical review of the paper regarding its relevance for your publication.
- Write quickly. Do not worry about words at this stage, just ideas. Keep going. Leave gaps if necessary.
- Expressing yourself in your own way will help you to say what you mean.
- Write without editing. Do not try to get it perfect the first time.
- Use the headings from your outline.
- Write the paper in parts. Do not attempt to write the whole manuscript at once.



HOW TO SELECT THE BEST JOURNAL FOR YOUR PAPER

When selecting the best journal for your paper you should read the scope of the journal to make sure that your topic falls within the scope of the journal. Make sure you examine and read several recent issues of the targeted journal so that you are aware of the content of the papers which have been successfully published in the journal.

The journal you select will determine the readership of the paper, specifically whether the audience is specialist or multidisciplinary.

Do not look at the impact factor of the journal. Look at the aims and scope of the journal so that you reach the right audience. This has a higher probability of impact. The best journals are not necessarily the ones with the highest impact factor.

INTERNATIONAL OR NATIONAL

Your target audience will determine whether you want to publish in a national or international journal. If your work is of national relevance, then you may wish to publish in a local journal. If you wish to publish in an international journal and reach an international audience then you have to make explicit the international relevance and linkages in your manuscript, in order to increase the likelihood of publication. You will also need to reference the international literature more in your introduction.

OPEN ACCESS

Open access journals are a growing group of journals that aims to make publications freely available and with unrestricted use.

Although these publications are made freely available, there is often a publication cost or an article processing charge associated with publishing. You should request these costs before submitting your article, if they are not on the website. Some open access

journals offer a peer review process.

For your first paper, we do not suggest going open access but encourage you to explore open access at a later stage in your career.

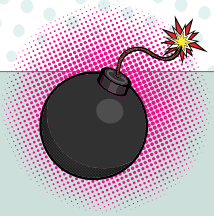
This arena of open access publishing is set to change drastically in the future.

PREDATORY JOURNALS

Predatory journals, more commonly found among the open access journals, are those journals that charge publication fees without providing the typical editorial and review services associated with legitimate journals. We recommend that first-time authors stick to more widely known journals in order to avoid predatory journals.
Some countries provide a national list of accredited journals, including open access, that they recommend publishing in.

IMPACT FACTORS

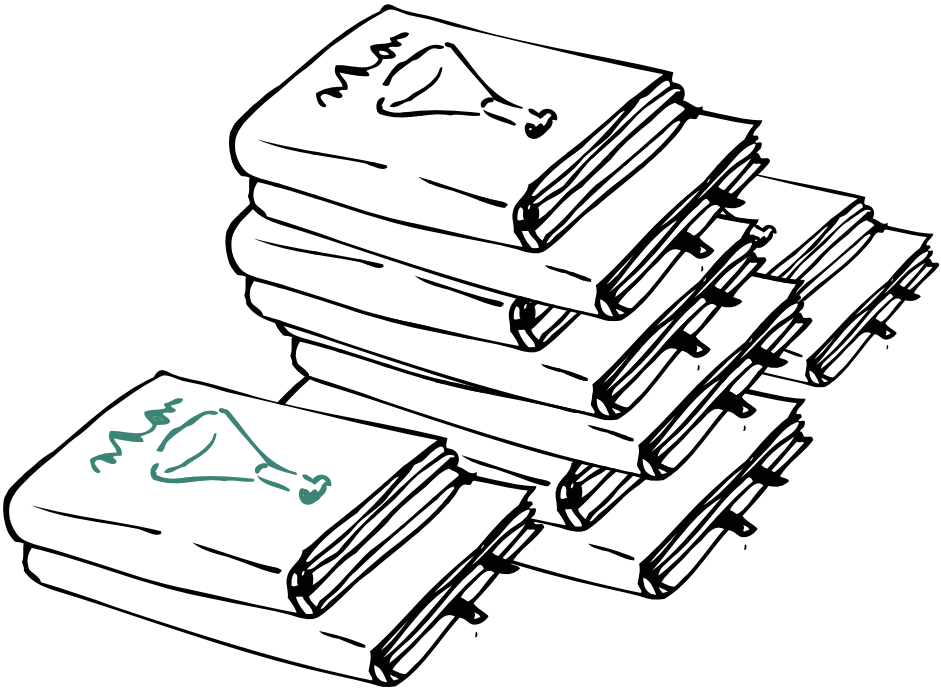
A journal's impact is a measure of the frequency with which the average article in a journal has been cited in a particular year or period. The impact factor is a proprietary metric published annually by Thompson-Reuters in its annual Journal of Citation Reports.



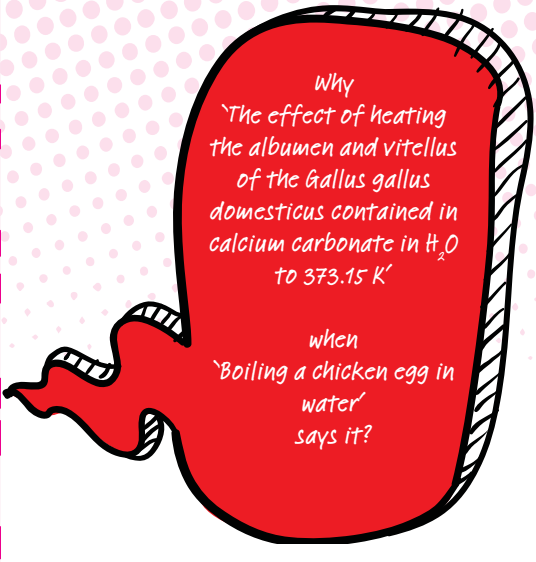
A journal's impact factor is the number of citations in a two-year period divided by the total number of articles published in the same period

Impact factor should never be used to assess the work done by individual researchers

An impact of 5.0 means that, on average, the articles published in that journal within the past two years have been cited five times. The impact factor should only be considered in context. There are inherent differences among fields of intellectual inquiry that result in natural differences in impact factor. The impact factor should only be used to compare journals within the same field of scientific specialisation. Impact factor as a metric only applies to journals.



WRITING THE PAPER



KEYWORDS

Use three to six descriptive keywords to describe the manuscript. The keywords should be precise and not include general keywords like "wastewater treatment process". Keywords and the title are used for searching papers. The words of the title should not be repeated as keywords, as the title typically is included in the search results.

Keywords:
- 3-6 words
- Precise, not general

TITLE – CATCHING THE ATTENTION

Keep the title as short as possible but still informative as the title "sells" the manuscript. Express only one idea or subject in the title and ensure that the important words are placed first. Avoid abbreviations. The title must make the reader interested to read the rest of the paper. Sometimes posing the title as a question can attract the reader's attention. The use of subtitles in the title can be useful.

Title:
- Short
- Informative
- Sells the manuscript
- Important words first
- Subtitles can be useful

INTRODUCTION

Early in the project you should sketch the introduction to clarify your thoughts. After the whole paper is finished you should complete the introduction to make sure that it is linked to the conclusion. Your paper is not a text book, so the introduction does not need to cover all the available literature, but rather the literature relevant to your paper. You should also avoid reference to fashionable or hot topics which are not relevant to your publication.

Your introduction should include the objective of the research and manuscript, and the problem/research question that you addressed. Provide a concise background to your research, focussing on where the gap in existing knowledge was and how your research addressed it. Quote only literature and research that has direct bearing on the problem that you are addressing. State your hypothesis and the suggested solution to the problem. You may also wish to give a big picture (contextualisation) of the results.

Exercise:

1. What is the vision of the research?
2. What is the Problem: the question to be addressed?
3. What is the Hypothesis: the suggested solution to the problem?

Give the abstract and introduction to a colleague or a friend who is not familiar with your work and ask them if it makes sense

Tip: Try putting your last sentence of your introduction first. Typically, when we write scientifically we conclude with the most important sentence. Try taking this sentence and putting it first so that the reader does not have to read the entire introduction to get to your key message.

We suggest ending the introduction with the following: "The rest of the paper is outlined as follows …" For example: The rest of the paper is outlined as follows: Section 2 details the materials and methods used; Section 3 presents the results; Section 4 discusses the results of the experiments; and Section 5 concludes with the key findings and recommendations for future research."

MATERIALS AND METHODS

The materials and methods section describes how you did your work. It should be possible for anyone else to verify and repeat your research. Describe the methods and not only "I used the software XYZ and found…". Start with a few paragraphs that will qualitatively describe how you approached the problem. This will prepare the reader to better understand the details of the experiments, simulations or analysis methods.

Always a balance between brevity (cannot describe every technical issue) and completeness (the reader must understand what happened)

RESULTS

The results section is where you present the experimental results, which are then discussed in the next section. The results should be described qualitatively in a paragraph before the numbers are presented in detail. This makes it easier for the reader to interpret the numbers when they are presented without getting lost in the detail.

Show only the experimental results that are relevant to your objectives and conclusions and which you intend to discuss

If you can summarise the results in one figure, then use only one figure. Typically, in a paper there is only space for two to three figures. Tables are useful but should not be too long, too detailed or present all the raw data. Tables should only contain key results. Details of the results can be published on a website or in an internal report. In some instances you may be able to present the raw data in an appendix.

The data you present in the results section should lead you and the reader, via the discussion section, to the conclusions.

FIGURES

Figures are crucial for your research and an informative figure or table can replace many words. Because space is limited in a paper, the whole message should be captured in one or two figures. The nomenclature and abbreviations should be explained in the figure or in the figure caption rather than having the reader search the text to understand the figure.

An informative figure can replace many words

The paper will probably be printed in black and white, while online versions may be in colour. Requesting that figures are printed in colour typically incurs a fee from the journal. Ensure that the figure is legible in black and white, and only use colour where it is absolutely necessary.

Avoid putting too many details in the figure and ensure that it is easily readable. The caption should be informative and not repeat information. Design each table and figure to be understandable on its own, without reference to the text. Organize the tables and figures in such an order that they tell a story.

TABLES

Are the numbers in your table realistic and does the table make sense? The reviewer might start with the table to look at a summary of the results. If there are errors or if there is misuse of numbers in the table, then the reviewer will assume there are more errors in your research.

NUMBERS

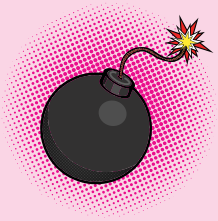
Numbers can be misused and abused in research, and are one of the main reasons for papers being rejected. The numbers from equipment or software should not be "copied and pasted" or used without interpretation. Always check the accuracy of your equipment, and the accuracy and detection limits of chemical analysis.

Use a minimum number of significant digits:

23 ± 7	correct
23.4 ± 6.6	not correct
23.4 ± 0.6	correct

Use the symbol ≈ to mean approximately equal to rather than ±

Put a space between numbers and units: E.g. 75 kg. Exception: 75%



STATISTICS

Be cautious in the use of statistics and statistical packages. Before applying statistics look at the data and interpret it qualitatively. What trends can you visually see when you look at the data and plot the data? Are you able to see correlations or time series trends? Is the data normally distributed, in which case you may use means and standard deviations? If the data is non-normally distributed, then standard deviations and means are meaningless but the use of medians might be more appropriate. Are you able to explain the outliers in the data? After you have inspected your data, then look at what statistics you can use to support your interpretation.

The mean is the average value, and the median is the middle value in a list of numbers (from the smallest to the largest)

DATA QUALITY

The quality of the data must always be checked and inspected. If the data has outliers, can they be explained? Are they real outliers, or are they outliers because the instrument or experiment was being changed, in which case, can you exclude them in order to better interpret the results?

If you cannot explain the outliers, then state that in your discussion and include it in the recommendations for future research. Do not attempt to hide results that you cannot explain.

Compare different measurements, for example flow rate versus concentration. Does the peak in one variable correspond to a peak in another variable? Does the data have negative concentrations? Does the data have zero value, missing values or below detectable limit values?

If you are using standard deviations, then how many values are you using to calculate standard deviations? As a rule of thumb, do not use standard deviations if you have a sample population of less than 20.

DISCUSSION

The discussion is the heart of the paper and should clearly present the significance of the results. The main function of the discussion is to answer the questions that were posed in the introduction. It is not sufficient to present the results, you must also explain them.

The discussion is what makes a paper scientific

Explain and discuss results that may be surprising; do not leave them unexplained as this will be picked up by a reviewer and you will then have to respond to them in the review process.

Lastly, edit, edit, edit ….

CONCLUSIONS

The conclusions are the "take home" message of the paper. it must be possible to derive the take home message from the results and discussion. In the conclusions, the reader will find out how successful you were. The conclusions are not a summary of the paper, but should be short, concise statements. The conclusions should contain no references, no "why", and no explanation, but should simply state what you found and what the take home message is.

Conclusion

- is not an extension of the discussion!
- is not a summary of your paper!
- has no references!
- should be short, concise statements
- will also show implications for future research

ACKNOWLEDGEMENTS

The acknowledgements are where you thank people who contributed to the research but their contributions did not qualify them for co-authorship.

These could be

- Advisors
- Financial support
- Proof-readers
- Suppliers of material and/or figures
- Someone who ran experiments or provided software support, but did not

contribute to interpreting the data or the manuscript.

You should always ask permission from the person before you include them in the acknowledgements.

REFERENCES

It is important to refer to what research has been published previously. Always document your findings and sources. Self-citing should be used with discretion but it is important that you refer to at least five other references. If most of the references are your own papers, then this may be a reason for your manuscript being rejected.

Typically 20-30 references

The recommended number of references is between 20 and 30, i.e. do not include too many references. References should include recent references as well as original references. Make sure that at least one reference is from the last five years. Always check that a reference is cited in the text.

The references should be understood by an international audience (usually in English) and should be retrievable by a librarian. The journal editor will check automatically if the references can be accessed online.

Follow the journal's publishing format, and check which referencing style and format is required. A reference management software package will assist in changing the reference style, but it not always necessary when there are less than 30 references.

If you copy a figure from another paper then you should give the source (e.g. from Olsson and Maherry, 2016). In addition, you are responsible for obtaining copyright clearance for any material, figures or tables that have been published elsewhere, including a dissertation. You may email the journal editor or the university to request copyright clearance for figures that you would like to reproduce.

If you "directly quote", then use quotation marks and a reference. If you paraphrase, then just add the reference

PLAGIARISM AND CHEATING

Cheating today is considered much more serious than it was in the past, and is a lot easier to detect. In the future, better methods of detecting cheating may be applied to research published today, so do not cheat as you will be caught out, maybe not today, but definitely in the future. The definition of cheating has also changed over the years and there are higher ethical standards now.

Breaking the rules includes the following:

- Submitting the same paper to more than one journal at the same time. When you submit a paper to a journal you sign over copyright of that paper to the journal and submitting it to multiple journals is a breach of copyright.
- Submitting previously published material.
- Data fabrication and falsification.
- Improper author contribution and attribution.
- Plagiarism.

If breaking the rules are so serious then why do authors cheat? Sometimes it can happen by accident, or due to publishing demands, or to increase personal status, or due to internal research group fights. All authors accept responsibility for the entire paper, even if a student wrote part of the paper and left out references, or cited the wrong sources, and this was not checked by the supervisor or other authors before submission.

Breaking the rules with regards to authorship includes:

- A new author to an old paper
- Adding an author that was not involved
- Omitting an author that contributed substantially to the manuscript
- A supervisor publishing a PhD student's work without their acceptance
- Adding spouses or partners as authors
- A student publishing results in a local journal without the supervisor being informed

Authorship is now being tested by journals. The journals request email addresses of authors upon submission who then receive an email asking "are you the co-author of this paper?".

Plagiarism is becoming easier to detect. Cut and paste, often directly from the Internet, is now tested by journals. Plagiarism includes using results stolen from an old paper. It is plagiarism to cut and paste because "I could not do it better than the old author" without correctly citing the source. In some instances, an author has stolen a full paper, including all tables and figures, but just changed titles and a few headings. As more reports are made available electronically, this is becoming easier to detect. You do not want to have a scandal in your career due to cheating which you were part of 20 or 30 years ago, but was only now detected due to better antiplagiarism software. Self-plagiarism, where you copy and paste text from your own report or paper, is still

plagiarism and will be detected when that work is made available on the Internet.

"Salami" is also considered breaking the rules. "Salami" is where you take research which would be acceptable for one manuscript and slice it like a salami into smaller papers and submit each one in the hopes of increasing your successful publications. A good editor and reviewer can detect when this occurs and it is highly likely that the paper will be rejected, or accepted with major revisions that would incorporate the other sliced pieces into it.

Cheating
Be careful with citations
Be careful about who should be an author
Behave ethically with respect to people involved in the research

IWA Publishing and the Editors of the journal are committed to maintaining the highest standards of ethics in reviewing and publishing your submissions to this journal. Please review the following statement of these fundamental principles and indicate your acceptance before proceeding with your submission.

- *Your paper is your original work and where you have included the work of others this has been fully and appropriately acknowledged.*
- *Authorship of the paper must include all those who have made significant contributions to the work, and they should be listed as co-authors. Persons who have not contributed significantly to the work must not be listed as co-authors.*
- *As corresponding author you must ensure that all co-authors have approved the final version of the paper and have agreed to its submission for publication.*
- *You have not already published in another journal a paper describing essentially the same material, nor is your paper currently being considered for publication in another journal.*
- *You should disclose in your paper any conflict of interest (financial or other) that might be construed to influence the content of this paper. All sources of financial support should be disclosed.*
- *Acceptance: Before indicating your acceptance of these principles on behalf of co-authors, you confirm that you have informed all co-authors of these principles and are accepting them on their behalf.*

IWA Publishing Ethics Statement for Authors.

SUBMISSION PROCESS

After you have decided which journal you would like to submit to, take the time to read the journal's instructions to authors which will include:

- Reference format
- Length of paper
- Format of paper
- Instructions for figures
- Submission procedure

In addition, you should be realistic about the rejection rate for the journal you are submitting to. Nature immediately rejects around 65% of all manuscripts submitted, and only publishes around 8% of all manuscripts submitted (2013 data). The rejection rates (March 2016) for Water Research is around 80% (Impact Factor 5.53) and for Water Science and Technology is around 76% (Impact Factor 1.11).

Ensure that you review the paper with a fresh eye before you send the paper to the publisher.

TIPS:

- Show your paper to two colleagues
  - One knowing the area who can give you technical advice
  - One who is a non-specialist and can tell you if the paper communicates well.

WHAT HAPPENS ONCE YOU SUBMIT

The Editorial Board defines the rules for acceptance for the journal. For most journals the papers are submitted online via an editorial manager (www.editorialmanager.com) although some journals still require submission via email. The editorial manager will allow you to indicate the topic and automatically transfers to the topic editor.

EDITORS ROLE

The editor is responsible for ensuring that only the best papers and papers most relevant to the scope of the journal are published. The editor will decide whether the manuscript is rejected upfront or if it should be sent for review. At least two reviews are needed. The authors and the reviewers will know who the editor is, but the authors will not know who the reviewers are. Based on the reviews, the editor makes the decision to accept/modify/reject.

One important criteria for the editor is a high probability that the paper will be read and cited by others, to increase the impact factor of the journal. In addition, the results should be interesting for an international audience and not only of regional or local interest, if it is an international journal.

Editors and reviewers look for:

- Relevance to the journal scope and objectives
- Originality - what is new about the subject, treatment or results?
- Clarity and quality of writing - does it communicate well?
- Conclusions - are they valid and objective?
- Good, short title, keywords and abstract

WHAT MAKES A GOOD PAPER

A good paper is driven or inspired by technological, industrial, management, environmental, economic or social challenges. A good paper should contribute new scientific methods or new applications of known methods. The scientific methods to get the results should be appropriate. The paper should also describe new directions and early findings.

A paper should tell a good story

The paper should trigger constructive discussions which increase the probability of the article being cited. It should contain adequate references and include good illustrations and tables. The paper must be of interest to, and comprehensible by, an international audience.

A good paper has a good description of the work, which includes the following:

- Clear language
- Good graphs
- A clear statement of the problem you are addressing adthe paper's objectives
- A clear summary of the results
- Easily understood, logical explanations
- Specific information
- The story that builds consistently, step by step
- No repetitions or redundancy

A good paper clearly describes the materials and methods used such that another researcher would be able to repeat the research. The experimental procedures must be accurately described. The data should be comparable and the results should be justified and relevant and should validate the approach used.

A good paper will have a good reference list, which contains all the relevant literature and makes it possible to compare the results. The paper should also encourage communication of research.

A good paper should advance knowledge and contain one message which is reliable, valid and answers a specific question. A good paper is not too long and follows the instructions for authors. The typical length of a paper is 6 000–8 000 words, including figures and references.

REASONS FOR REJECTION

An editor may reject your manuscript for numerous reasons:

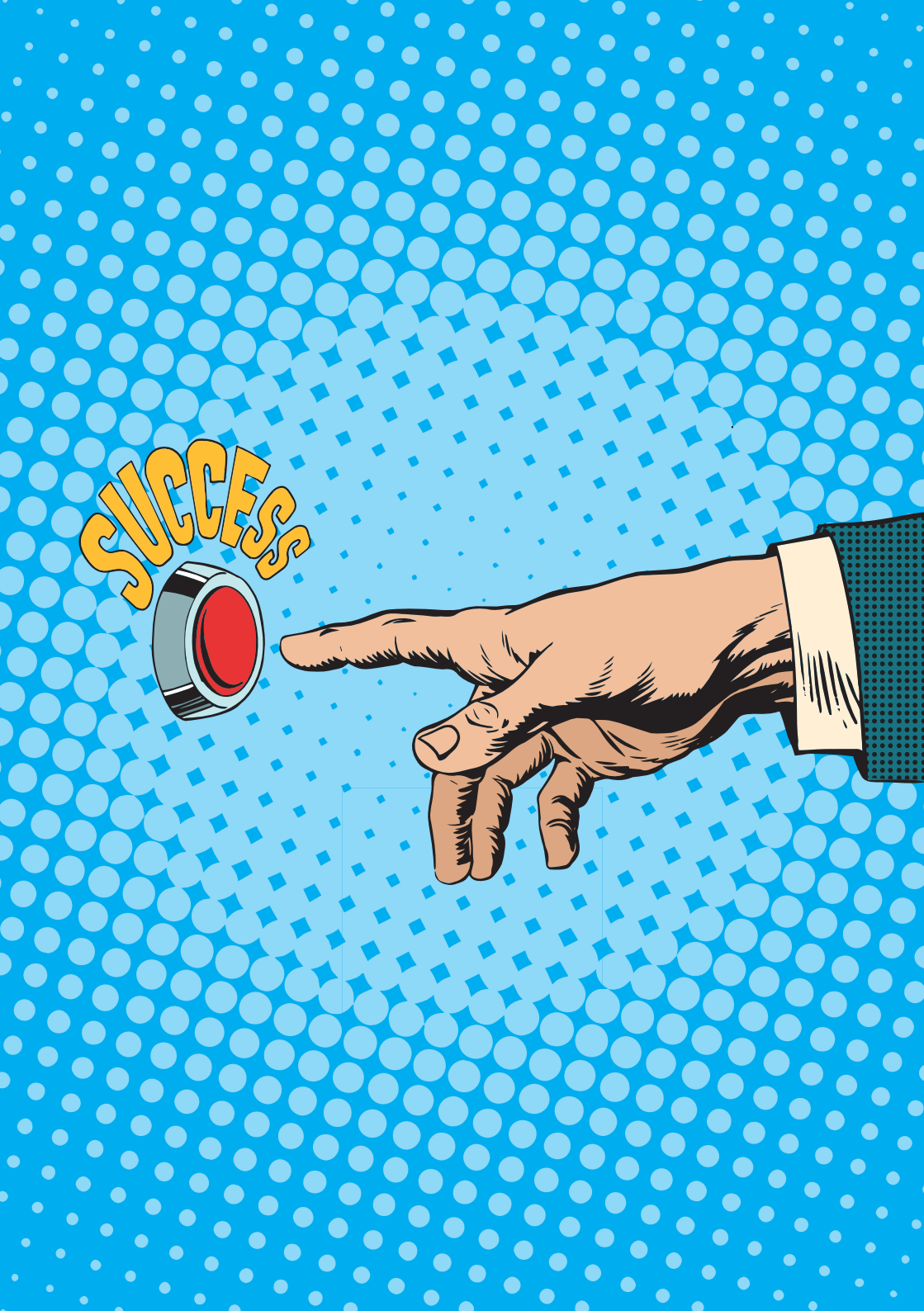
- There is insufficient new and interesting information in the paper
- The paper is too commercial (essentially advertising a product or a company)
- The paper's English is too poor to be understood by an international audience (employ a language editor if necessary)
- The paper focuses on local issues with insufficient interest for an international audience
- Lack of history of the study (no literature study)
- Lack of discussion or conclusion
- Too few references or mostly self-references
- Data collection without comparisons
- Lack of quantitative information (data, tables, etc.)
- Too long (consult the journal's Instruction to Authors)
- Findings not generalised or used to build theory
- Low probability of it being cited

Some submissions are intrinsically unsuitable for publication in the journal. It is helpful to all concerned if they can be screened out from the review procedures straight away. This avoids wasting the time and effort of authors, editors and reviewers. Format reasons include the following:

- Content matter outside the scope of the journal
- The English is too poor to be readily understood
- Not properly structured as a scientific paper
- An essential element is missing, e.g. Introduction, Methods, Results, Discussion, Abstract, Keywords or Conclusion
- Inadequate reference list
- Paper too short (< about 3 000 words) – probably too little information
- Paper too long (> 5 000 words). Mostly asked to shorten the paper
- There may be special reasons, then motivate!
- Paper promotes a commercial product

Editorial reasons for upfront rejection include the following:

- Lack of novelty (including repetition of well-established results)
- Lack of interest (triviality of results)
- Incoherence of work or its description
- Plagiarism


SUCCESS

REVIEW PROCESS

Should your paper not be rejected upfront then at least two reviewers will be selected to review the manuscript. Reviewers do not receive remuneration for their review and volunteer their time to the journal. Reviewers are given a deadline to review the manuscript after which another reviewer will be selected to review.

THE ROLE OF A REVIEWER

The reviewer assists the editor by advising whether the paper should be accepted, accepted with minor revisions, accepted with major revisions or rejected for publication. Should revisions be required, the reviewer is responsible for being explicit about what revisions are needed.

Peer review is essential to the research process and ensures that journals maintain the quality of the research that they publish. The review process improves the manuscript and everybody's manuscript has room for improvement.

HOW TO RESPOND TO REVIEWERS

It is best not to respond immediately. Wait at least 24 hours until you can separate your emotions from the process. Try to figure out what the reviewer is trying to say. Often it is the tone of the reviewer which is upsetting rather than the actual comment. If you don't understand the reviewers' points, then ask your colleagues and co-authors to assist you.

Reviewers are only human and it is easy for them to forget that there is a person behind the manuscript. Reviewers can also make mistakes and you are entitled to disagree with the reviewer provided you justify it. Respond to each comment from the reviewer and be polite and courteous. Be sure to thank the reviewer for giving up their personal time to review your paper, especially if it is a thorough review and improves your paper.

If the reviewer is unable to determine what is new or what the contribution is that your paper makes, then this is because it is not clear in your paper and you need to rework the key messages so that it becomes clear. If the reviewer recommends additional literature, then make sure you read the literature and reference it where necessary – they are only trying to improve your paper.

TIP:

- Assume that your response to the reviewers will be publicly available, and only respond in a professional tone.

WHAT DOES THE EDITOR LOOK FOR IN AN AUTHOR'S RESPONSE TO REVIEWERS

Firstly, make sure you adhere to the time frames given you by the editor. Should you need an extension then request one upfront rather than waiting until the last day. Make sure your responses are courteous and polite and that you respond to every comment from the reviewer. You do not need to include every recommendation from the reviewer in your manuscript but you need to respond to each one. You are entitled to disagree with the reviewer provided that you justify your response to the satisfaction of the editor.

The editor will check that you have responded to all of the reviewers' comments to their satisfaction and if you disagree with a reviewer then the editor will check that your responses are appropriate and justified. A reviewer will indicate if they are willing to review your manuscript again after you have incorporated the reviewers' comments, or if your publication is acceptable for publication without additional review. In instances where reviewers' comments are greatly divergent then the editor may request an additional reviewer to review your manuscript.

HOW TO RESPOND TO REJECTION

Do not take it personally or be obsessed about it. When you are emotionally calm, analyse the editor's and reviewers' responses and determine the reason for rejection. It may be that your paper is outside the scope of the journal, or that your research needs further development before it can be published. Before submitting your paper to another journal, make sure that you revise your paper and make the key messages clearer. Even a successfully published manuscript can be improved. If your manuscript was rejected because of the language, then you may wish to hire language editor to improve the language before submitting to another journal.

The peer review process is not faultless, and it may be that you would have better success with a different journal and different reviewers.

If you are determined to publish you research, then you may want to look at presenting it at a conference and having it published in the conference proceedings.

Every researcher has had a paper rejected by a journal and you are not alone in having to deal with rejection. As you become more experienced in publishing you will receive fewer rejections especially as you learn to self-edit and self-review your manuscripts.

HOW TO PRESENT YOUR PAPER AT A CONFERENCE

When presenting your paper at a conference remember that you only have time to present the key issues and a summary of the entire paper. Start with the important message – the conclusion. This leads to the "why" and eventually the "how". If you run out of time, then people would not have missed the key content. The purpose is not to describe all the details and methodology, but to motivate the audience to read the paper.

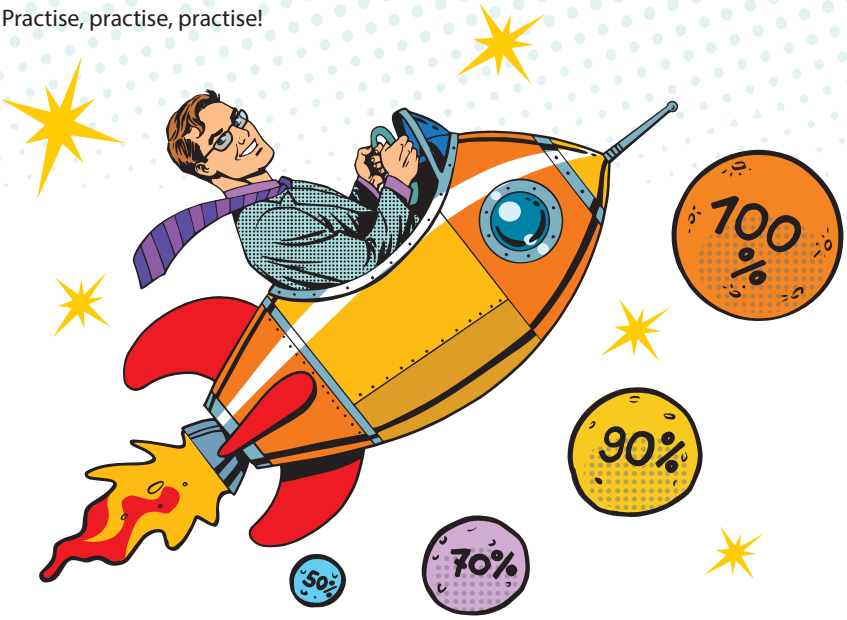
TIPS FOR USING SLIDES WELL

- Maximum 5–10 lines on one page. Never put too much text on a slide as then people read the slide instead of listening to you.
- Use an easy-to-read font such as.
- No characters smaller than size 20.
- Use diagrams and figures instead of tables.
- Improve diagrams until they are easily understood, and highlight or circle what the audience should focus on.
- Never copy printed material that cannot be read by the audience.
- Plan for almost 2 minutes per slide so for a 20-minute talk you will use 10 slides.
- Choose colours with care:
  - Text and background colours should contrast
  - Dark letters on a light background is more legible
  - Most projectors have variations in the colour that is projected
  - Avoid backgrounds and pictures except where it adds value to your presentation
  - Avoid red-green combinations as many people are red-green colour blind.
- Strive for simplicity and visibility.
- Practise with feedback and then practise some more.

TIPS FOR PRESENTATION

- Speak slowly and distinctly. This is especially important for presenters from English-speaking countries.
- Never compensate for the limited time for your presentation by increasing your speed of speaking. When you speed up, people will stop listening. If you are running out of time, take a deep breath and continue. We recommend starting with the conclusions so that if you run out of time, then the audience has still received your key messages.
- Test with colleagues and friends whether your explanation of the contents or diagrams is sufficiently clear, and how much time you need in order to explain diagrams and tables.
- Consider the expertise of the audience, and tailor your presentation so that everybody can understand you.
- Do not waste your time by presenting text book lectures.
- Avoid too much animation, as it is seldom appreciated and often does

not go according to plan during the conference presentation.
- Talk to the audience and not the screen.
- Be enthusiastic.
- Start with your concluding points.
- Respect time limits.
- Market yourself and who you are.
- Practise, practise, practise!



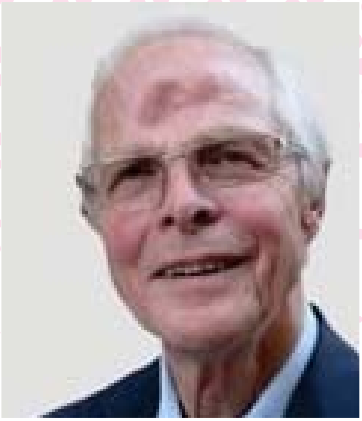
FURTHER READING

IWA Publishing Instructions for Authors: http://iwaponline.com/content/instructions-authors

A Guide to Publishing for Academics: Inside the Publish or Perish Phenomenon. Jay Liebowitz. April 8, 2015. Auerbach Publications. ISBN 9781482256260 - CAT# K24053

The Academic's Guide to Publishing. Rob Kitchin and Duncan Fuller. 2005. SAGE Publications Ltd. ISBN: 9781412900836

ABOUT THE AUTHORS



PROFESSOR GUSTAF OLSSON

Gustaf Olsson is a former IWA Publishing award holder. As the Editor-in-Chief of Water Science and Technology, and Water Science and Technology: Water Supply (2005–2010), Gustaf is highly experienced in the publishing and academic domain. He has also served as a member of the IWA Board of Directors and IWA Strategic Council. In 2012, he was the awardee of an honorary doctorate degree at the Universiti Teknologi Malaysia (UTM) as well as an honorary member of IWA. In 2014, Gustaf was appointed as a Distinguished Fellow of IWA. Gustaf facilitated the previous YWP-ZA Publications Workshop series in 2014 and the IWA-UTM International Publication Workshop series at UTM, Malaysia between 2011 and 2016.

ASHTON MAHERRY

Ashton Maherry is a senior researcher, the 2016–2018 YWP-ZA national secretary, project manager for the Second YWP-ZA Publications Workshop Roadshow, and Programme Chair for the 8th IWA International Young Water Professionals Conference. Ashton is passionate about building the capacity of young professionals. In his private capacity, Ashton is a freelance consultant specialising in GIS, groundwater and freshwater conservation.

INTERNATIONAL WATER ASSOCIATION (IWA)

Water underpins every aspect of human and environmental existence. The severe water challenges facing the world today require an unprecedented global response. Members and staff of the International Water Association (IWA) are situated in 130 countries worldwide, forming the largest international network of water professionals working towards a water-wise world.

For further information: http://www.iwa-network.org/

SOUTH AFRICAN YOUNG WATER PROFESSIONALS (YWP-ZA)

The South African Young Water Professionals (YWP-ZA) programme is focused on bringing people working in, or interested in, the water sector together in a meaningful way. YWP-ZA is a network of people who are passionate about all aspects of water and its intrinsic linkages to people, economies, development, nature, dignity and life itself.

For further information: www.ywp-za.org

WATER RESEARCH COMMISSION

The Water Research Commission (WRC) is a dynamic hub for water-centred knowledge, innovation and intellectual capital, providing leadership for research and development through the support of knowledge creation, transfer and application. It engages stakeholders and partners in solving water-related problems, which are critical to South Africa's sustainable development and economic growth, and is committed to promoting a better quality of life for all.

For further information: www.wrc.org.za

WATER INSTITUTE OF SOUTHERN AFRICA (WISA)

The Water Institute of Southern Africa (WISA)'s vision is the promotion of professional excellence in the water sector, through building expertise, sharing knowledge and improving quality of life. WISA is a professional, comprehensive, independent, volunteer, water sector community institution, that provides diverse membership benefits, and supports the African water sector in a representative and effective way. It strives to be an effective and efficient organization, subscribing to the principles of its memorandum of incorporation and complying with processes of good corporate governance.

For further information: www.wisa.org.za

UNIVERSITI TEKNOLOGI MALAYSIA (UTM)

Universiti Teknologi Malaysia (UTM) is an innovation-led and graduate-focused research university. It is located both in Kuala Lumpur, the capital city of Malaysia, and Johor Bahru, the southern city in Iskandar Malaysia, which is a vibrant economic corridor in the south of Peninsular Malaysia.

For Further Information: www.utm.my