

EVERYTHING YOU'VE EVER WANTED TO KNOW ABOUT THE B.H. NEUMANN PRIZE BUT WERE TOO AFRAID TO ASK

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Each year at the Annual Meeting of the Australian Mathematical Society, student talks are assessed for the award of the B.H. Neumann Prize for the most outstanding talk presented by a student. Since the meeting is being held at Newcastle next year and I have been on the committee five times in the last six years, I thought that some updated advice would be in order for this year's participants.

Eligibility

Technically you are not eligible for the prize unless you are both a student and a member of the Society but in practice the committee attends all of the talks presented by students. As well as the kudos of winning, the prize has a financial component and the chair of the committee has been known to suggest that it might be worth a student's while to join the society. So the important thing is to be a student. This means a part-time or full-time student not having yet submitted a doctoral thesis. There is no lower bound on the qualification; undergraduates may compete alongside graduate students but all are judged on an equal footing.

Criteria

The criteria which the judging panel are instructed to use to assess speakers are

- the organization and structure of the lecture,
- the methods used to present the material,
- the motivation and setting of the general context,
- the originality of the substance of the lecture, and
- the rapport with the audience.

Broadly speaking this means judges look at the presentation (organization and methods), the content (motivation, substance and originality) and the rapport with the audience. The problem a student is working on often says more about the supervisor than about the student. This means judgments are mostly made on the basis of presentation. Having said that, the judges are all mathematicians and, given a choice between two equally worthy presentations, will tend to opt for the student who demonstrated most mathematical competence.

When you write your talk, try to think of your audience. There will be students in the audience who are just beginning their studies, perhaps in different areas. What would you like to hear if you were in their shoes? Your talk should be well prepared. Ideally, you should write a draft or two of your talk and then present it to your fellow students. After another revision you should give a seminar at your home institution as a "dry run" of your presentation. Try to ensure the audience contains an experienced speaker and someone not directly in your field. Then seek their advice and act upon it.

Presentation

The method of presentation should be appropriate to the material presented and the venue. Almost all venues have overhead projection facilities but the size of the projected image may vary greatly. You should find out where you will be speaking and visit the venue as soon as you can after you arrive for the conference. Be prepared to adjust your presentation to suit the venue. For example, you may have planned to use the blackboards and to reserve an area for an example with which to illustrate results as they are described. If you find you are speaking in a lecture theatre which does not have enough board area for what you want to do you may have to compromise and use a combination of overheads and chalk to achieve your aim.

Different methods of presentation have different pitfalls. A mixture of methods is often appropriate and effective.

Blackboard/Whiteboard

These presentations look very professional if your talk is so polished that you don't have to refer to your notes. In practice, most students are very nervous and need to refer to notes. Part of the art of the presentation is in writing notes which will be helpful to you when you are half way through your talk and standing in front of a room full of strangers. If it makes you feel more secure then write out every word you think you want to say even if you don't plan to write every word on the board. However, try to avoid writing dense notes; you spend half your time looking through them to find what you need. Use space and, if necessary, colour to help you identify key points in your notes.

Always ensure that the audience can see and read what you have written. It is worth testing out the legibility of your boardwork in the comfort of your own institution. Start writing out your presentation on the board. When you are about to erase the first board go to the back of the room and take a look at what you have written. Make any adjustments you think are necessary to your technique in order to improve legibility. A particular trap with whiteboards is persisting with a marker that is running out. (Chalk has the advantage that it is obvious to the presenter when it is running out.) Often the text is legible from nearby but not from the back of the room.

Overheads/visualizers

If you use prepared overheads then write or print them with an eye to presentation. Avoid photocopying pages of papers; they are invariably illegible and overwhelm the audience with a mass of detail they couldn't possibly follow even if they are given a much longer time.

As with a board presentation, it is worth checking the legibility in the comfort of your own institution. While overhead legibility is venue-dependent, you can check the worst-case scenario by finding a room with a small projection area and looking at the screen from the very back of the room. Don't forget to check the actual venue of your presentation and make any necessary adjustments before you give your talk. When printing out material for overheads the very smallest print size I use is 28 point and I have been known to use as much as 72 point for titles. You have to decide on a delicate compromise between ease of legibility and amount of material that fits on a slide. Flashing slides at a rate of knots is just as ineffective as cramming them full of material.

The cardinal sin of an overhead presentation is to stand between the projector and the screen thereby casting a shadow over the image or simply to stand in such a place that you obstruct the audience's view of the screen. If you do a dry run of your talk this will doubtlessly be picked up by the audience but it is sometimes difficult to appreciate the extent of the effect because the minute you turn to look at the screen you tend to remove yourself from the line of projection. If you are finding it hard to cure yourself of such a problem I suggest getting someone to video your practice presentation so that you can see the presentation from the position of someone in the audience.

Do not think of your overheads as your notes. There will be a bare minimum that you can write to ensure the audience can follow your story but you may want to say more than you write. If the material allows, you may also want to make the presentation more dynamic by making some sketches during the presentation, either on the boards or on the overheads. This can be particularly effective if you are describing a process. Also, if you know you are going to want to refer back to a particular slide, try to put it to one side so that you don't end up flicking through a pile of slides looking for it.

If the room has more than one projector you should try to use both as this puts less pressure on the failing memories of the audience. They will not be as familiar with the material as you are and can not be expected to remember detailed statements or equations from previous transparencies.

Computer aided presentations

If you are going to use a computer for a presentation it is important to ensure the room you will be speaking in has the necessary facilities. Many of the points made about overhead presentations are equally valid about computer presentations. Try to resist the temptation to embellish the presentation with distractors such as sound effects unless it is essential to the presentation.

Content

All talks are about communication and with mathematics this is a formidable task even amongst mathematicians. You should remember that not everyone in the audience is a specialist and many will be students. So the introduction can afford to be relatively long. Make an effort to get as many people motivated as possible; give them a reason to want to know about your work.

You have to be realistic about what can be covered and what an audience can absorb in a half-hour talk. It is easy to get excited about your solution to a problem and to want to tell everyone about every last detail. The audience has a better chance of catching the excitement of the discovery and valuing it if they can appreciate the fundamental insights which led to the completed work. Try to avoid filling the talk with long formal proofs. Perhaps the proof of a key result can be given towards the end of the talk. Sketches showing how the main ideas interact are much more effective than detailed proofs in the time available. Your aim should be to pique the audience's interest and present your results. If they are sufficiently interested in the details they will ask you for them afterwards.

You may give a talk on any mathematical topic you like but most students talk about their own work such as their Honours, Masters or Ph.D. thesis. In such a case the audience is interested in the originality of the results and your contribution to them. The judging panel is also trying to assess the depth of your understanding of the material and related results. It is important to set the problem into context, naming those on whose work you are building, and to explain your role in the work, particularly if you have collaborators. An assessment of the weight of the contribution and an outline of the problems which remain are also valuable. They help the audience gain some perspective on the depth and relevance of the work.

Illustrate the material with examples. This illuminates the arguments and is often a point of contact with the audience. A well chosen example can often be introduced early on in the presentation and be updated as the theory is developed.

Rapport with the Audience

Always remember that the aim of the talk is to communicate your work and create interest in it. The talk is not successful if you lose touch with the audience. Remaining in touch with the audience requires deliberate effort on your behalf. For example, if you're using boards you will probably have your back to the audience as you write. Try to connect with the audience by looking at them directly from time to time.

You should try to gauge whether the audience is following the presentation. Everyone knows that it is difficult to present complex material in a restricted time and have concern for audience understanding. Nevertheless, a successful talk depends on it. Try to be flexible. Try to build time into the presentation for questions, and answers. Try to construct your talk so that if time is taken up by questions during the presentation you adjust the delivery so as not to run overtime. It is better to finish a couple of minutes early than a couple of minutes late. I have often heard people complain about talks overrunning whereas I have never heard anyone complain about a talk finishing early.

Good Luck!

REFERENCES

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