



Primer Talk

I'm sure you have seen many boring and ineffective talks, but with the proper preparation we want to make sure that yours will be the opposite!

Whenever you give a talk (or write a paper), you should pick up your audience from their current knowledge levels and take them on an educational journey to a higher level of understanding:

new information / new convictions / new perspectives

↑ (your talk)

their existing knowledge

Think of yourself as a taxi driver. You have to know where your passengers are right now and where they should get off. If you try to pick them up at the wrong location (your talk begins at a level that is too low or too high), you won't bring them anywhere (because your audience is either bored or cannot follow).

A *goal-oriented* or *backwards approach* to speechwriting therefore begins with defining a clear goal for your talk, with understanding your audience and with analysing what is required to bridge the gap between the audience's current knowledge and your objective.

To prepare for your talk, I recommend you answer the following questions on the attached worksheet.

(a) The Conclusion

- (i) Write down the *point* of your primer talk. This could be one key idea of the topic. Or you might want to say why you find this project interesting. An example: if I had to give a primer talk on the content of our lectures so far, I would phrase the point of my talk as

Any good numerical solution of a PDE should reflect the characteristic features of the analytical solution.

Remember that you only have 2-3 minutes, so be realistic about how far you can take your classmates. What is the most important aspect, the central idea of your project? Limit the scope of your talk to what's crucial.

- (ii) Formulate the *purpose* of your primer talk. What should your classmates be able to do after your talk? Be concise and make sure that attainment of this objective can be measured: avoid wishy-washy words such as 'understand' or 'know'. Instead, use action verbs such as 'calculate', 'explain' or 'differentiate between'¹.

Example:

By the end of this talk, members of the audience should be able to name 'continuous dependence on data' and the maximum principle as two characteristic features of solutions to elliptic equations that a discretisation scheme should preserve.

- (iii) Now that you know what the point and purpose of your talk are, write down a succinct conclusion for your talk on the next page. This will be the last sentence of your talk, which your audience should remember.

Example:

¹For a more comprehensive list, visit http://www.sae.org/training/seminars/instructorzone/measurable_verbs_for_learning_objectives.pdf

In summary, next time someone asks you to write a solver for an elliptic problem, make sure that your discretisation preserves two characteristic features of the problem: (1) continuous dependence on the data and (2) the elliptic maximum principle.

NB: ‘Thank you for your attention. Any questions?’ is not a good conclusion. (Instead, pause for a few seconds to let your conclusion sink in, then gesture towards the chairperson to indicate that you are done.)

(b) The Opening

- (i) What do your classmates already know about your topic? Consider their general knowledge, or topics that have already been covered in this course. Keep in mind that you will be talking to a very diverse audience of mathematicians, scientists and engineers.

Example:

From everyday experiences, students intuitively know that

(i) the temperature distribution in a room is hardly affected when the temperature of the heater increases from 50 °C to 50.01 °C

(ii) at steady state, there are no bubbles of hot or cold air inside a room

- (ii) Formulate an opening for your talk, that relates both to your classmates’ existing knowledge and to the point and purpose of your talk. Make your opening captivating by beginning with an anecdote, a personal story or a rhetorical question. This will be the first sentence of your talk.

Example:

Imagine you are writing a program to simulate the temperature distribution in this room...

NB: ‘Hi everyone and thank you for coming to my talk. I’m Timm from the Maths Department at UBC and I want to talk about numerical solutions of elliptic PDE’s’ is not a good opening. This is all boring and unspecific information. Even worse, the chairperson would have already mentioned exactly the same details in their short introduction for you. There is no need for parroting.

(c) The Body

- (i) You have already written the opening and the conclusion of your talk. The role of the body is to bridge the gap between the two. Think about a logical structure that will make it easy for your classmates to follow your ideas. Given the brevity of your primer talk, the body will likely be composed of two short parts only, such as problem – solution or 1st step – 2nd step.

Focus solely on your goal. Be rigorous and skip any details that do not contribute towards attaining your purpose, even if you think they may also be interesting, exciting or entertaining.

Complete the outline of your talk on the next page with a few keywords.

Example:

*1st point:
continuous dependence on data
(heater 50 °C → 50.01 °C)*

*2nd point:
maximum principle
(wall temperature between 15 °C and 50 °C ⇒ room temperature in the same range, no bubbles of hot or cold air at steady state)*

- (ii) Finally, formulate a succinct speech title that stimulates interest and relates to the point of your talk, without giving away too much information.

Example:

Elliptic PDEs: Two Features that make Numerical Solutions Physical Solutions

Title:

Existing Knowledge:

Point:

Purpose:

Opening

Body

Conclusion
