

17 Simple Strategies

To Survive Your PhD

Next Scientist

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Introduction

Dear PhD student, welcome.

I suspect that if you are reading this you might want to survive your PhD. I call it survive. You might call it finish your PhD. Or graduate. Or take this unbearable pain from me. What we can agree is that a PhD is not a walk in the park.

I know it because I wanted to quit during my PhD and start an MBA. I wanted to go to a company. I wanted to stay home and cry like a baby. I have been there and I know your pain. Let's see if I can help you a bit.

Allow me to simplify the situation a bit. Two things will guarantee that you finish your PhD. First, that you don't quit. Second, that you are a good scientist.

In order not to quit you need to stay motivated. And as you and me know, PhD motivation can hit unexpected low levels. I will share with you some tips on how to set the right expectations for your PhD and how to regain motivation.

In order to become a good scientist, you need to develop some basic skills. Some relate to writing, presenting, reading and so on, you know, the typical skills for scientist. Other skills are not commonly recommended, like time management, health enhancement, software use and blogging.

All in all, I think these tips are a good mix to boost your PhD motivation and your scientific skills.

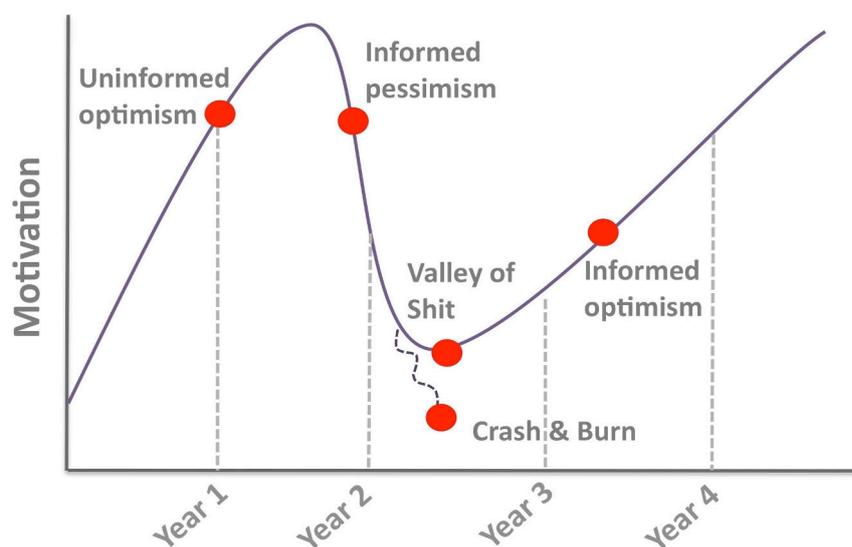
Let's start.

5 Phases Of PhD Motivation

The motivation during your PhD is not constant, it resembles the shape of a roller coaster. It's all ups and downs. A PhD combines moments of extreme happiness with periods of suicidal thoughts.

The ideal mental state, obviously, lies in between.

Let's have a look at how your motivation will fluctuate during your PhD years.



Phase 1: Uninformed Optimism

You start your PhD, everything is new and you find your project really cool. It feels like you are going to solve a big problem and you might get a big prize if you are ambitious and work well, maybe a patent, maybe a paper in a high impact journal. Sounds familiar? It is a similar feeling to starting in a new job, everybody is nicer than in the previous job and it is by far better organized. Well, give it some months, you'll realize it is not that great.

Phase 2: Informed Pessimism

You have worked for some time on your project, you understand the field

better, but unfortunately you are still lost. You don't see any good results in the near future and you start to realize that this project might be a bit too big for you. This phase is more severe if your PhD doesn't continue from previous work in your master, if you switched fields.

Phase 3: Valley Of Shit

You are in the middle of your PhD and you have a crisis like 40-year-old guys have. Since you don't have money to buy you a Porsche, you just cry in silence in a corner. You think "Is this all? Am I a failure?" The project is not as pinkful as you dreamt it, in fact, you are going to struggle and work your ass off to finish a minimally decent body of work. You feel that you have wasted a lot of time, that you did a lot of useless little projects. Now they seem useless, but you never know, maybe sometime later you connect the dots and they were the starting points of something great.

Phase 4: Crash and Burn (optional)

While at Phase 3, if you don't step aside fast from your negative feelings you are going to be screwed. Negativity might take over, leading you a mini depression. At this stage, many people think they have wasted their time and they give up. They walk away with an unfinished PhD. Needless to say, we want to avoid this.

Phase 5: Informed Optimism

Slowly you start to realize that your PhD thesis won't be as awesome as you thought. Whatever. At least you'll get some publications, enough to graduate. Maybe the Nature paper has to wait for your post-doc. Who cares. You'd better finish a half-ass Phd than nothing. You are getting the grip of your field, you can contribute (something) to the state of the art. It should be enough. Good enough, you don't need perfect.

This curve is fitted to PhD data collected during many years. This means everybody will experience a certain deviation from the values here predicted. Some phases will be mild while others can be extreme. At any stage, don't be carried away by over-optimism/pessimism. Stay cool, be water my friend.

It's All About Frustration Tolerance

What is the thing that will make you succeed in a PhD? What separates the men (or women) from the boys(or girls)?

Frustration tolerance is what will keep you going during the long months when nothing seems to work. Some of your results will suck, you will screw up one step of the process and you will have to redo all from the beginning, referees will reject some of your papers, you will look like a fool at some meetings; it is fate of a PhD student. Accepting that "shit happens" will keep the engine running.

You will need this the most when you hit the phase 3 of PhD motivation, aka the feared "PhD dip" or "The Valley of Shit". At that moment you will be close to give up, it happened to me. After 2 years in the PhD, zero papers published, and no accomplishment in the near future, I was suffering the PhD dip. During months I was in a negative mood, which caused of course everything to get worst and worst. As a result, I did not produce any good work during the time. What got me out of the situation was:

- Talk with other PhD that shared the typical "been there, suffered that" with the added "overcame that".
- Have several one on one meetings with a PhD counselor, a sort of shrink for students. If you take it seriously it can help you big time.
- Keep working even if I did not want to, thinking that better times would come.

Are you a team player? Do you like the social aspects of work? Then a PhD is definitely not for you. Yeah, not for you.

You might have 3 supervisors, your group might have 40 members, you might even work in a team of the same topic. It does not matter. At the end of the day, each of us care about our own project. Each of us care about our publications.

This has its positive side. If you depend on somebody else's project, and he fails, you fail. So it is good not to expose to unnecessary risk your success.

I chose my project because it was a part of a bigger project that involved other PhDs and postdocs, which itself was at the core of a group of projects. All of this was a futile attempt to minimize the loneliness of the PhD, and I have to admit that it was a failure. Even in such an interdependent group, I spend most of my days without discussing things with my colleagues, doing my thing and hoping to get some papers out.

You will feel frustrated, you will lose your motivation. At that moment, think of the 5 Phases of PhD Motivation. Do not quit. You know that if you keep working things will improve. Results will come. You will see your path with recovered (and informed) optimism.

Learn The Rules

Your goal is to finish your PhD. In order to finish your PhD your Professor has to be satisfied with your research. He has to be confident that you did good work, that you are scientifically mature to be considered a PhD. Then he has to propose you to defend your thesis, be it with a viva, an oral exam, writing a book, or any other method.

You have to give your prof what he wants, not what you think that he wants. You need to know how the PhD drill works. Here you have some questions you need to answer.

- What does your he expect from you so he allows you to defend your thesis?
- Is it a number of peer-reviewed publications? Do they all need to be published or can some be in submission?
- Is it a number of pages in your thesis?
- Is it a publication in a high impact journal? How high is that impact factor?
- What happens if you are delayed in your PhD? Can you get an extension or are you fired?

Most of the times your prof will be more inclined to you graduating if you have also done some little extras. Extras that improve your scientific career, or his career or the group reputation.

You can earn extra brownie points by giving a talk at an international conference, or collaborating with other scientists, or bringing home a research grant. Maybe he would like you to help with teaching undergrads. Maybe he would appreciate you helping organize a workshop.

Do whatever it takes so hi opinion of you is excellent.

All these questions need to be answered by your professor and/or the graduate school office. Go ask them and make sure you and your Professor are on the same page about your PhD.

Know Your Prof

You already have asked him what you need to do to graduate. Now you need to analyze him. Discover what he likes about research.

You might think your professor is using you to push his career. You might have heard that PhDs are nothing but cheap scientific labor. Guess what? You have to use him too.

Your goal is to have your Professor doing things for you on time, when you need them and without delays. He is such an important part of your PhD.

Think about it. Your professor decides if you can defend your thesis. Your professor gives you green light to submit a paper to a journal. He gives green light to you going to a conference. To you collaborating with somebody outside your research lab.

Your professor will sign the bills of your research expenses. Your professor can allocate for you that piece of equipment you need and that seems to always be kidnaped. You will need a good recommendation letter from him to be accepted in a post-doc.

Seems like a good idea to have a good relationship with your Prof, right? Being in good terms will motivate him to give you a helping hand when you need it.

If you want to go the extra mile you need to think like your Professor. Imagine you have propose a 12-month research project for your next year. You want your Prof to give you green light.

What type of research projects does he find exciting? Maybe he wants innovative projects. Or maybe he prefers his PhDs to walk on solid ground and reuse some old in-house project.

He might want all the coauthors to be from the group, or he might prefer always some external collaborator to give more prestige to the publication.

How does your professor like to be pitched ideas? Via email? In a meeting with slides? Over a coffee? Reading a 20 pages project proposal?

You must know his working habits. If you need a meeting with him it's wise to know when his agenda accommodates meetings with students.

You will need your Professor to read one of your documents and give

feedback. When does he read documents and give feedback? Maybe you send it on Monday but he won't read it till Sunday evening, that is when he spends a couple of hours giving feedback to students. In this case it makes more sense to plan your writing accordingly and have a draft ready on Sunday morning.

At the end of your PhD, you will be the expert in your narrow field. In fact, you should know more about your little field than your professor. On the other hand, your supervisor has the overview of a broader field where your project fits.

What a professor is for:

- Discussing the solutions you are proposing to a problem you have. But remember that you have to propose solutions, otherwise you are wasting his time.
- Giving you the green light and signing: recommendation letters for student bursaries to attend a conference, travel expenses, collaboration agreements.
- Making use of his reputation to open doors, "I work in the group of Prof. ...".

In summary, a professor is a catalyst.

What a professor is NOT for:

- Teaching you the ins and outs of your field.
- Deciding for you.
- Providing blazing fast feedback, he is rather busy.

In summary, YOU have to do the work.

As it turns out, knowing how to manage your professor will decide how much success you will get during your doctorate. Provide the ingredients he needs to perform his magic and don't expect the unexpected from him.

Realistic Expectations

We all start with preconceived ideas about a PhD, about ourselves and our capabilities.

Things are the way they are, not how you would like them to be. Let's destroy some of these myths so you don't carry the wrong expectations about your PhD. The most difficult part of a PhD is not generating great ideas and implementing them. It's all about staying motivated. Keeping your motivation up is essential. You know it, that's why you are reading this guide.

A PhD is lonely. Although you are in a research group, you are on your own. You are alone doing a lonely PhD in loneliness. 4 years is not so much time, you won't have "plenty of time to do it all". You won't do all those things, not even being as smart as you think you are. You are not so smart as you think. Neither as stupid as you think.

Most likely you won't make it to professor. Most people quit the scientific career at a certain point. Develop transferable skills so you can land a job in industry. Eventually you will (most likely) stop your academic career.

If you want to know everything about your field then choose a very small field. Although in a very small field you won't find many people to talk to. Your PhD should contribute "something" novel to our body of knowledge. This "something" doesn't need to be massive or a scientific breakthrough. Just care to produce something original.

Nobody will thank you for your research and efforts. Medical doctors get a thank-you from their patients. Taxi drivers from their passengers. You know your research is important, but nobody will thank you for it. When you finish your PhD you will be a "doctor". Understand this is "the other kind of doctor". The real doctors everybody knows are medical doctors.

You got such a cool PhD project, in such a prestigious group, with a supervisor that is a rising star in the field. Logically, the least you can expect is to cure cancer, right? Well, no. It is good to be ambitious, don't get me wrong. Aim at the stars and at least you will be on top of the world. Fine, but breakthrough discoveries are not at everybody's reach. There are so many factors involved, that making a great achievement is more like a miracle than science.

Be happy if after many years of scientific career you pushed our knowledge a bit further in the race to cure cancer.

Read, But Not Much

There is so much literature to read in your topic that you should forget about reading it all. Instead focus on a few key papers. Those that build the foundations of your field. Don't get overwhelmed by all this papers. You might be one of those that think "before starting to do science, I will read all the necessary papers till I understand everything in my field." Surprise surprise ... you will never be ready enough to start.

Your understanding of a field must come from combining reading and doing. How are you going to fully understand the ins and outs if you never tried a single experiment yourself? How, if you never experienced the thought process of choosing one technique instead of another?

Do not be paralysed by the sea of knowledge before you. You cannot know it all.

Read Older Thesis

Since you are going to spend a bit of time reading, why not read older thesis from your group?

Reading older thesis will help you to prevent reinventing the wheel. You find what has been done and build upon that. You don't want to find after six months developing a method that there is already a standard protocol developed by the previous PhD. An additional advantage of reading older thesis is that they already did a literature review for you. They selected the papers most relevant in your field at that time. Sounds like a good starting point for your reading list.

Get Results Soon

I still have nothing to show after 2 years in this PhD.

Does that sound familiar? I have felt like that. Most I could show was a poster with “this is what I want to do in my PhD” information. No results.

After 2 years and no meaty results to show I felt like I hadn’t produced that much. I thought that 2 more years with that success rate would lead to failure. As a result my motivation went down together with how I perceived the quality of my research.

What kind of scientist could I be if I didn’t have any real result in 2 years?

The root of the problem is that I focused on grandiose projects. The only results I was thinking of were publications (biiiiig mistake!!), which we know don’t occur that soon for PhD students.

Instead of aiming at big achievements I should have focused on smaller and achievable goals. Instead of building a full-fledged predictive model, I could have tried to make a good enough model and use it on some silly data to show its viability.

Here are some ideas to move fast at the beginning of Your PhD:

- Don’t aim for perfect, aim for good enough.
- Simplify your projects, cut the number of subprojects, focus on the core of the project that is publishable.
- Produce a prototype fast, get feedback, improve prototype, get feedback, ... You can also think of this as fast experiments that can easily confirm or refute your assumptions. Like this you can easily know if to invest more time or not in that path.

You can ask yourself the following question if you want to implement these ideas:

- Can I remove this task without my project losing its essence?
- Can somebody already use this prototype to give me feedback?

“We don’t want a thousand features. That would be ugly. Innovation is not about saying yes to everything. It’s about saying NO to all but the most crucial features.”

Quite zen, isn’t it? Your “crucial features” are those tasks and project that will get you good results. Results you can publish or present at a conference. Results that will be included in your thesis.

Instead of focusing on the finished publication, try to have a simplified version of it. Show it to colleagues. Have them use what you developed and ask for feedback. Improve your prototype. All this will make you feel that you are progressing and therefore, keep your motivation up.

#Action Point: Try it for 2 weeks, A, set tight deadlines for your projects and B, decide which essential things you should do so what you deliver is good enough. Get your tasks done faster and move on the next thing.

Be Healthy

Mens sana in corpore sano - A sound mind in a healthy body

One of the easiest ways to get a burn out is not taking care of your body. Sure, you are a scientist and your brain is the most important equipment you have. But neglecting the rest of your body will cause severe damage.

Taking care of your body is not only about hitting the gym to sculpt the body of an underwear model. It's about eating, drinking, sleeping, exercising and relaxing your mind. But hey, in any case I wouldn't say no to an underwear model body. Would you?

Let's admit it, during a PhD is common to gain weight. Overtime hours spent at the faculty lead to eating all the junk we can find in a vending machine. We eat at irregular times because of the schedule of our experiments. What about eating cold pizza as breakfast? Done.

We also tend to forget proper drinking. The only times we drink is to put in our bodies coffee or sugary drinks. What happened to the recommended 3 litres of water a day? This is the fast lane to diabetes, obesity, insomnia and lots of other nasty conditions.

I was also in that lane. I was feeling bloated, heavy, out of breath. Have you walked up a flight of stairs and lost your breath? Welcome to the club. My poor health condition led to higher stress which led to poor sleep. My brain was busy for hours when I laid in bed. Next morning I would wake up like a zombie. You can imagine how productive I was the next day.

I was going from hero to zero.

And then I changed. And I am going to tell you how I did. I hope it also works for you.

Tips To Stay Healthy As a PhD Student

- **Slow-carb diet:** as proposed in [The 4 Hour Body](#). In every meal (breakfast, lunch, dinner) I ate slow-carbs, veggies and lean protein. The result was not that I lost fat without losing muscle and energy. My mood also improved.
- **I brought my own food to the university:** every morning I prepared my slow-carb lunch and packed it in a tupperware box. This saved me a lot of money on the unhealthy food served at the canteen.
- **Less snacking:** I stopped buying crap from the vending machines. Thanks

to the slow-carb diet I was less hungry, but in those occasions I did, I drank a big glass of water. This entertained my stomach and hydrated me.

- **I drank only one coffee in the morning:** The rest of the day I drank water, green tea or yerba mate. This increased the number of trips to the toilet and improved my hydration.
- **Less alcohol:** I got used to alcohol-free beer and to drinking less wine. Remember that despite alcohol makes you funnier and more charming, it has a lot of sugars and gives you awful hangovers (not recommended if your brain has to perform).
- **More exercise:** Hitting the gym every now and then was new in my schedule. I also joined a basketball team for the cardio's sake and for the fun.
- **I bought this [blue light](#):** to fight against my winter blues and specially, to improve the quality of my sleep. Really recommended if you don't see much the Sun.

The result of all this was a healthier me. A healthier me was a more focused, effective and engaged me.

Give Presentations

Nothing paralyzes PhD students more than having to present at a conference. But nobody teaches us how to give a speech. Supervisors and PI focus mainly on science, not on making the presentation skills of PhD students better.

It's a scary task and our scientific career depends on how well we talk in public. Fortunately, improving your presentation skills is possible if you know how.

Let me share some simple advice with you to improve your presentation skills.

Preparing The Presentation

Time In Advance

As a general rule, the more time you have for preparing a talk the better it will be. Try not to push everything until the very last minute. But don't over do it.

The best thing is to create specific times in your schedule for your talk preparation and stick to them. You should aim to have your slides 95% finished 3 days before your talk. The goal is to have a few days to rehearse your talk and change little details in your slides.

Your Audience

Knowing your audience and their background has a high impact on the quality and structure of your talk.

The amount of introduction required for your field, each technique and each problem will depend on how much the audience knows about your topic.

If your audience comes from a broad range of backgrounds you will have to introduce your field of research saying what it is about and why it is important to do research in your field. Don't take for granted that they know the techniques you used. Your audience will appreciate a basic description.

If most of your audience consists of scientists in your field you can skip introducing it and spend more time on the novelty of your research.

A great speaker gets the attention of the audience very quickly at the beginning with either a personal story or with addressing an issue the audience faces.

Think about problems or fears these people have and answer their 'So what?' question. Which questions might your audience raise? This will help you understand their mindset and see your presentation from their perspective.

Learn From Others

Talks can come in different forms: journal club, seminar series, annual society talk, conference talk, even a guest speech at the last wedding you attended is a talk. You can learn the most from either great or bad speakers.

Which ones did you really enjoy? What exactly made these talks great? What

were the mistakes in awful research presentations? Why were these talks so bad that you wished yourself somewhere else?

Now be honest to yourself: Do you make similar mistakes when you are nervous? Only by analysing these talks you might already get hints on improving your presentation style.

Creating Slides

Collecting ideas in slides can produce a chaotic presentation. Do you want a more organized way to create your slides? Start from the end. It goes like this:

- First of all you need to think about the main message of your talk. If you had to sum up your talk in one or two sentences, what would you say?
- Create the acknowledgement slide. It helps to fill up at least one slide and avoid the paralysis by a blank page.
- Create the conclusions slide. Here you should list no more than 3 take-home messages. You could also include no more than 3 things to improve, aka future lines of research.
- Decide which results you want to show. Create the slides with the images of your results.
- Create the slides with the methods that people need to hear to understand how you reached your results.
- Create the introduction slides. In these first slides of your talk you motivate the audience to listen, show the importance of your research and explain the choice of methods that will come later in your talk. The type of introduction slides depends on your audience. Sometimes you will need to introduce your whole field of research, other times just the narrow problem you are tackling.
- Create the title slide.

How To Stay Calmed

To achieve presentation nirvana there are 4 tips:

- Prepare and rehearse your presentation. A good preparation boosts your self-confidence in general.
- Know what you are presenting. Don't invent anything. Don't present something you are not 100% sure how it was done. Don't present anything that you do not believe in.
- Talk to the audience. Don't just spit out memorized ideas.
- Improve your behavior. As you give your presentation the audience not only listens to you but also analyses your non-verbal communication. Don't worry, everyone communicates this way.

Practice Your Talk

You should practise your talk on your own and with an audience.

If you practise your talk 30 times it might be too much. You could try to cut your repetitions gradually from one talk to another until you reached a healthy number below 10 times.

Giving your talk in front of an audience (your group members) helps to get honest feedback. Let them shoot at the design of the slides, the content, your articulation, your rhythm and anything they think will improve your presentation.

Memorizing your talk as bullet points also gives your brain a chance to talk in a 'normal' way during your presentation. If you prepare your slides wisely they will guide you through what you want to say and remind you to keep track.

Learning full sentences often ends up sounding like you are reading from a book and if you forget only a few words you will panic.

If you tend to lose track of time practice your talk repeatedly with a timer. After several iterations you will fine-tune your message so it fits in the time you have for your talk.

Giving The Presentation

You should arrive early to have enough time to talk with the chair of your session. The chair of a session is the boss running the show. Introduce yourself to the chair and advise on the pronunciation of your name and provide a short bio, so she/he can introduce you. Don't forget to hand over your slides. Ask the chair to test your slides on the computer used for the presentations. Check that the projector displays colors, transitions and videos flawlessly.

Also, arriving early will give you a chance to get used to the room itself and its surroundings. Go on stage and visualize yourself at the time of the presentation. Once you go up the stage for real, it will feel familiar and less intimidating.

Extra tip to reduce panic: Ask something at one of the talks before yours. Doing so gives you the feeling that 'you have already talked in public that day'. This helps to start your talk more relaxed.

Body Language

- With gestures it's like many things in life: not too much and not too less. Try to find a middle point where you avoid overly dramatic hand gestures or keeping your arms as still as if they are dead.
- Take your time to breath properly in between and don't rush through the talk as if it is a race.
- The most important thing: Smile! Be friendly while talking. Also, smiling relaxes your body because it goes both ways: We smile when we are happy but when we force ourselves to smile we start feeling happy.
- If you get shaky hands avoid using a laser pointer. Instead you can use words like 'In the upper left corner of the figure we see...'. If you do have to use a pointer use two hands, one for the pointer and the other one to hold your wrist; this will reduce the shaking.

Audience/Eye Contact

If you can't look at people directly during your presentation you can look at the horizon line just above the heads. OR better: Look randomly at people without analysing their expressions.

Make sure you look at every 'section' of the room from time to time (e.g. left side/ middle/right side). So no one within your audience feels left out.

Questions & Answers Time

Depending on the audience, leave at least 10 minutes for questions at the end of your talk.

If you are too shy looking people directly into the eyes, concentrate on a point between their eyes. People don't realise the difference and still think you keep eye contact.

The best advice for answering questions is to understand them in first place. If you don't understand a question double-check before talking about something the person didn't want to know. In that case you may be very blunt by asking: 'Do you mean....? Are you asking about this or that....?'. These questions might also give you some additional time to think about your answer.

It's good to repeat the question even if you understand it. In this way everybody in the audience can hear it and you double-check that you understood it. Don't panic if you don't have an answer to every question. Even the best expert can't know everything.

Here you have some replies you can use often to answer a question:

- 'That's an interesting point of view, I haven't really thought of this aspect yet'.
- 'We haven't looked into that yet, but it is [on our to-do list / one of our future lines of research / the next idea we want to explore]'.
- 'Unfortunately I don't have time looking for the data now but I could look it up after the talk if you could spare some minutes afterwards'.

Don't take questions too personal. Even if it seems they make your research look silly. Even if the tone and attitude of who is asking seems too aggressive. Stay cool. Be polite. You don't want to start a cat fight in front of the audience.

Most of the times people don't mean anything bad with their questions.

Write, A Lot, Early

Papers, papers, and more papers. Don't be fooled by speeches like we don't care about papers but about quality research and the so. The tragic truth is that papers measure how good your research is. Furthermore, many universities require you to have a number of published papers to get your PhD diploma.

You can look at papers in two ways, in a qualitative and/or quantitative way. A good scientist has either a lot of published papers or a few published papers, but of very high impact.

Needless to say that if you have a ton of very high impact papers you are the king.

You will have to write a lot, considering how important papers are and the fact that you are not born knowing how to write a killer scientific publication. Remember, practice makes perfect. In fact some people recommend to write a fix amount every day, a sentence, a paragraph, a page, you name it. The important here is to adhere to a length of text that you can measure and that easily check whether it is done or not.

This advice on writing papers I found the hard way, the first paper I wrote received close to infinite rounds of feedback. The main reason for this was that I hadn't practiced much. But hey, it is never late to start doing things well.

And if you don't know how to start, there is a lot of help out there on how to write well for [academics](#) and [non-academics](#).

Some Writing Tips For PhD Students

In any sort of communication:

- **Have a Conversation:** in most of your writings write as you speak. Avoid complicating your language.
- **Find Your Voice:** don't always be objective. Include some part of your personality in your communication.
- **Say what you mean, mean what you say.**

Academic writing:

- **Clear, Concise, and Well-constructed Language:** Typos, spelling mistakes, and grammatical errors leave a bad taste. Meticulous proofreading of the paper and using word processing tools help highlight (red and green squiggly lines) the awkward text. Practice economy in writing; avoid colloquial phrases, contractions, run-on sentences, and extreme verbosity in language. Further, try not to digress away from the topic.
- **Construct A Veritable Content:** talk about what you know, don't invent

- things. If you state something, give facts and proper citations.
- **Don't Copy:** In academic writing, there are few intellectual offences more impacting than passing off someone else's content as your own. It is okay to take a leaf from the previous authors' researches and opinions, but do not merely rehash the content without giving a due regard for its origin.
 - **Avoid Over-quoting:** Word for word quoting is legitimate in certain situations, but your text will seem borrowed if you over-quote. Insert direct quotations, only when you cannot possibly express the equivalent meaning in your own words. For a major chunk of your document, however, consider paraphrasing. Paraphrasing simplifies a selection, but may not necessarily condense it. Further, make sure that you attribute the original source to the paraphrased content.
 - **Summarize:** Confining your paper to an allocated number of words is one of the most daunting tasks if you want to improve your academic writing. Summarizing simply means doing away with all the extraneous content without sacrificing the kernel of the topic. You can follow what is popularly known as Ockham's razor. Applying this process ensures that your final product is terse and focused. This may entail mentioning just 8 case-studies instead of the 32. Or pruning the document to a third of its original size, but more important is that your manuscript meets academic tenets.

Use The Right Software

We have all looked at our iPhone, Kindle or Moleskine and said “how have I been living without you all this time?”. You know, that feeling of money well spent on a product.

It makes you feel like a savvy buyer. But buying these products also allows you to do things that you could not do before, or in a more pleasant way, or more efficiently, or all together.

The same happens with apps and software tools for our daily chores. Chores like managing projects, sorting information and sharing documents. We all have to do these things, even scientists.

For such tasks, some tools are changing the way people work around the globe. Some are general tools, others are specific for scientists. What they do have in common is that once you start using them, you won't go back to your old methods. Once you start using them you go paperless, you become a bit more of a digital scientist.

If you are like me, you have spent countless hours downloading, installing and testing software. Software for different purposes like backing up your data, managing your bibliography, taking notes, managing your tasks and on and on. I think I even spent a whole week testing project management software. What a waste!! Specially since my final choice was just a to-do list software.

What we want here is not to waste time finding and learning new software and at the same time, use software that can save time and headaches for us. Therefore we need to use simple tools, that are multiplatform (that work both on your laptop and smartphone) and that sync everything via the Internet.

Please, give a warm round of applause to the 4 tools every PhD student should be using.

Evernote

Evernote is a second brain for PhD students. It captures, manages and finds all your digital information. Not only this, it syncs everything across your devices. Evernote organizes everything in notes and groups them in notebooks. You could see a notebook as a project or a topic and a note as a piece of information. Notes can be anything from pieces of websites that you clipped, photos you took with your phone, an audio memo you recorded, written notes or a scanned document. Evernote swallows and digests almost anything.

Where Evernote excels is in retrieving this amount of data. It searches in all the contents of your notes, even in the images. By this I mean that if your photo has some text in it, Evernote recognizes it as text and makes it searchable. Can you see the possibilities this gives you?

I recommend to have a read at the best book on Evernote ever written, [Evernote Essentials](#).

How can you use Evernote in science? Have you ever wanted to have a repository of the lab journals of your students? Students come and go, and so do their experiments. Knowing why, when and how they did something is a hard task. This is why many keep a lab journal (yes in paper, still, today). Wouldn't it be better to have a synced digital version of this lab journal to avoid a disaster in case the journal is lost ? Wouldn't it be better to have access any time to somebody's lab journal while it is being created or years after the person is gone? With Evernote your students can document their progress and share it with you. They can have a note per experiment, containing setup, results and images. And you can see them ordered chronologically.

Have you ever wanted to organize snippets of information you find online? You are preparing a presentation and want to cite some articles you found in Scientific American and Wired. But you cannot google them because you forgot their titles. Or you once saw a funny picture that could now be used in your slides but forgot to save it.

Evernote allows you to clip from your browser those websites or contents that you might end up using one day, either for fun or in serious publications.

Going the extra mile with Evernote for scientists

Evernote is easy to use and rather intuitive. If you also consider the many different features it has, it is no surprise that people find the most surprising ways to use Evernote.

If you want to squeeze all the juice out of Evernote I recommend [Evernote Essentials](#). It helps you to get started with Evernote and use it like a pro. It even gives you ideas on how to use it if you are a blogger, a programmer, a foodie, or whatever you are.

You can [buy Evernote Essentials here](#).

Dropbox

[Dropbox](#) allows you to share files between computers and gadgets and have an online backup. You just need to install Dropbox in your computer, phone or tablet, and it will create a "Dropbox folder". Whatever file you store in this

folder will automatically be pushed to your other devices.

Dropbox does one thing, sharing files between devices, and it does it very well. It is dead simple to use. Give it a try and forget to attach large files to your emails.

How can you use Dropbox in science? Have you ever wanted to work at home on that next manuscript, but realized that some files were only in your desktop at the university? Dropbox keeps the files in your work desktop synced with your laptop, for those evenings when you have to work at home. No more copying files back and forth at the end of your working day, with Dropbox they are automagically in your laptop.

Have you tried to email files to your collaborators and hit the maximum file size of Gmail? You can create a subfolder and share it with colleagues. Anybody can add and delete files in this folder, and the changes are replicated in everybody's computers. At work we don't use pendrives anymore to transfer files between colleagues. Even those sitting in the same room, place a file in the Dropbox folder and keep working on their own things while the file is sent to the other computers.

You can [download Dropbox for free here](#).

Mendeley

Mendeley is a reference manager and probably the best known of these tools for digital scientists. It keeps all your documents tidy and ready to insert as citations in your manuscripts.

As you might have guessed, it keeps your documents synced between devices. Yes, it also syncs your documents to your iPad so you can read your own publications in the toilet. Another great feature of Mendeley is that it can process the pdf of a paper and automatically find all the authors, title, journal name, and create a citation ready to be exported.

How can you use Mendeley in science? Have you ever wanted to have access to the papers a student collected in a literature review? With Mendeley you can share with other users collections of documents. Your student can group all the cited documents in the collection "Literature review" and share it with you, and voila, you have access to all those pdfs. No need to spend 2 hours searching and downloading them.

Have you ever started in a group and wished they had a recommended reading list prepared? With Mendeley you can create a private or public group and add publications to it. Any new comer to your group should read them to dig into your latest research.

You can [download Mendeley for free here](#).

Wunderlist

Do not go to bed without writing your to-do list for tomorrow. And do not write it anywhere else but in Wunderlist. Wunderlist is the simplest to-do list you can find. Not only this, it syncs all your tasks across web, different computers, smartphones and tables.

After having a time management crisis where I tried every single to-do list software, I ended up using Wunderlist because it was the one that felt the most natural.

You can [download Wunderlist for free here](#).

Take Ownership

When you begin, if you are lucky, you get a project description. Others just get a title. And then, you get a pet in your back and a “now, work it out”. There you are, alone with your project. Yes, it is your project. You decide how to do things, you filter out the things your professor tells you to do.

Professors think and talk a lot, they are like a fountain of ideas. They are paid to do so and in many cases, they feel forced to say what they think. What happens is that many of their ideas and suggestions are plain rubbish. And you have to keep the good ones and delete the crappy ones. Don't be scared of saying no.

At the end you should be the expert in your little field, not your professor.

You will be hold responsible for the outcome of the project, so you should decide how things are done. Get used to take responsibilities, the more you practice, the better prepared you will be to run your own group one day.

Say No

Many people and tasks will suck your energy during your PhD. They will take your time and produce nothing valuable in return. They will keep you from reaching your goal: finishing your PhD.

Saying “No” to distractions will keep you focused on what matters.

Email, phone calls, meetings, visitors, all these are interruptions that don't allow you to enter the zone and focus on finishing the work at hand. You should manage your time like the most precious thing and to teach others how to approach you. You can tell them via auto replies when you are going to check your email and consequently, when they can expect a reply.

The same with phone calls, set phone hours.

Try to skip meetings as much as possible. They are big time wasters. Propose instead a 5 minute phone call or Skype conference. Ask in advance for the agenda. If there is none, find an excuse.

If you happen to attend a meeting, ask for the finishing time of the meeting and remember the chairman that you have to abandon the meeting at that time (if it gets prolonged).

Action Point: Try to set a specific time to read and reply emails, let's say 30 minutes after lunch, when you are not very sharp with most of your blood in your stomach. You could do the same for paperwork and boring bureaucratic activities, like filling forms and reports. What about that slow Friday afternoon, when not much happens and you are kind of lazy?

Have A Social Life

Don't feel guilty for having a life outside graduate school. You are not just a scientific slave. Develop your multiple interests and hobbies.

Like you read in the "Be Healthy" chapter, join a sports club if that is your hobby. It will keep you fit, release your stress and help you to meet non-scientific folks.

Do activities that allow you to meet people. Be it sports, dancing, acting, language courses, cooking lessons, volunteer work, you name it. Make friends. Go do fun things with them. Enjoy your free time.

The goal is to have a purpose to finish your work today. There has to be something exciting outside the lab for you. That exciting something will make sure you finish your work on time.

Forget those colleagues who pretend to be workaholics. Are they really producing so much quality work by staying till late. I doubt it. For sure not if you are a smart worker who works effectively by following the time management ideas of [The 4 Hour Work Week](#).

Don't just work for the sake of work. Leave work at work. This also means making friends outside your cohort of PhD students. Otherwise you will always end up talking about PhD stuff and hearing that dreadful questions "how is your thesis going?".

Share The Pain

At the beginning of this book we discussed that the biggest factor for PhD success is tolerating frustration. There is this pain growing inside you every time you think of your PhD. When you think about the next months you starting missing some oxygen. There is this pressure on your chest again.

I hope you don't feel like that. But I did. I was rather sick of my PhD during The Valley of Shit. I was busy and getting used to a new field of research, new colleagues, running some never ending research projects, it all took time. I spent a lot of energy making sense of all what was going on.

I was also frustrated. I lost motivation in my PhD. I hit the Crisis of Meaning in the 5 phases of PhD motivation. I spent every day trying to keep my head above the shit.

At that point I could have just let it go, sink and give up. I would have been a quitter, but at least I wouldn't have wasted the last two years of an unfinishable PhD.

Instead, I decided to fight. And there was one action that made all the difference: **I opened up to others.**

- I shared my worries with a buddy. He gave me a much needed insight: he had gone through similar difficulties, I was not the only one. And also, there comes a day when you are not in the Valley of Shit anymore, there is hope.
- I asked for help to the coach/psychologist the university offers to scientists. She helped me out to step back and see the global picture. I also realized I could take control of my PhD and stir it in the direction I wanted.
- I started writing my own science blog. If I was going to fail or succeed, I wanted to leave some tips for future PhD students on what I had learned during the PhD. More on this in the next chapter.

The first benefit of letting the pain out is that it doesn't stay inside burning you. The second benefit is that you hear yourself complaining and will start reflecting on what you. The third benefit (if you share it with your buddy or coach) is that you will get some external feedback, understanding and support. You might even get the advice you need to hear.

It's ok to complain. It's ok to say you are having a bad time. It's ok to accept that the situation won't improve by just working harder. So don't be shy and find

a buddy.

A tip when searching for a buddy: try to help your buddy first, before he helps you. It's the abc of networking and social relations. You first give, before receiving. If you want to know more about getting people to like you (and help you), have a read at the book [How to Win Friends and Influence People](#), by Dale Carnegie.

Do not be embarrassed of approaching a coach. Most faculties have special coaches for PhDs. Although they are a sort of psychologists you are not crazy. In fact, losing motivation during a PhD is so common, coaches have lots of experience helping and fixing PhDs like you.

Now, this is what I want you to do. Go find a colleague PhD, or a postdoc who you trust. Use the social skills presented in How to Win Friends. Start sharing. Keep sharing for several weeks. If after a month you don't feel better, approach the PhD coach in your faculty.

No you are ready to regain the love for your PhD, to start climbing the motivation slope with your informed optimism and finish the PhD.

Start A Blog

At the lowest point to my PhD I started reading blogs. It was not a new thing for me, since I had followed several bloggers for a while. This time, I was reading blogs for scientists.

What I got of these blogs was to discover that others were struggling, other grad students were also walking through the Valley of Shit and they needed help. Then it struck me. What advice would I give to a starting PhD student?

I decided that my science blog would contain what I learnt during my PhD. What it means to be a graduate student. The do's and don'ts. Those things I wish someone had told me earlier. Those things that you wish were written in the contract before you sign it.

I felt like I was writing for that poor little Julio at the beginning of my PhD. But in fact, I was reflecting on all I had learnt up until that moment. I was giving to myself the advice I needed.

I started putting vague ideas I had in the back of my mind into words. This exercise turned out to be vital. It helped me to see the causes of my frustration. Once I knew these causes I could act upon them.

After I wrote several posts about PhD life I started to be more calmed, I regained some hope in my PhD. I saw how the PhD game has to be played and discovered how to handle better the frustration. This kept me going in my PhD.

I don't know if the advice I shared in my science blog helped other people. What I know is that it avoided me quitting my PhD.

As you can see, I used an academic blog to boost my morale. Are there any uses? You bet!

You can use an academic blog to boost your academic footprint. In other words, to spread more little scientific bits that have your name associated. Right now, your scientific reputation is not only measured only in peer-reviewed publications. Your scientific blog posts, your tweets, your contributions in forums, all this will grow your reputation.

And you know the best thing of an academic blog? That it's yours. You decide the editorial line. You decide the contents and the formats. You decide how people are going to see you, how they are going to read about your science.

In your blog you can write formal or educational, you decide according to

your target audience. In your blog, you are the boss.

How To Create Your Own Science Blog In 5 Minutes

Curious about know how to run your own science blog? Do you want to become an academic blogger? Do you want to grow your academic footprint and your scientific reputation? Then follow these easy steps and build your own academic blog in 5 minutes.

1. Buy your domain and [hosting at BlueHost here](#).
2. Install Wordpress from the cPanel menu.
3. Make your blog look nice by [buying a theme here](#).
4. Install plugins to give extra functionality to your blog.
5. New to blogging? Check the books [First Week Of Blogging](#) and also [31 Days To Build A Better Blog](#).

If you need more help setting up your academic blog, check this [free videotutorial](#) where we guide you through these steps.

Think Of PhD Afterlife

My last bit of advice for you is to look ahead into the future. Dream of what is waiting for you after your PhD.

Right now your PhD might suck. Knowing that at the end your situation will improve can help you to keep going. Do you know what can make it better? Having a sexy plan for your PhD afterlife.

Would you want to work harder to finish sooner if the dream of your life was waiting for you or if it was more of the same pain? Having a nice goal in mind makes you work harder. Having an amazing earth-shattering unbelievable goal makes you do the impossible.

Write down your wild dreams for after your PhD. Anytime your motivation is at its lowest, read again your dreams. Seeing what waits for you at the end of your PhD will cheer you up and help you not to give up.

Maybe you want to move to another country. Or try a different job. Maybe you just want to go on the holidays of your life (like I did) to reward yourself for finishing your PhD. Think of something you can do once you finish your PhD that excite you to the bone.

No matter what your dream for after your PhD is, memorize it. Write it down. Share it. Embrace it. Do research on it. Plan it. Rehearse it. Make it real.

Afterword

Dear friend, this is the end of this book. I hope you liked it. I hope you found it useful. I hope that it helps you somehow to survive and finish your PhD.

As you have seen, the road is long. Fortunately, there is a wealth of resources to help you along the way. Within you. Within your institution. Among your colleagues. Among your friends. On the Internet. At Next Scientist.

Use these resources. Be kind to them. Be thankful. Once you make it, once you know how to survive a PhD, help those that are still struggling.

Remember, you are not alone in this. From Next Scientist I will try help you in every way I can.

Now, go and finish this PhD.

Your buddy.

Julio