The Top 10 Lessons I Learned in Grad School

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11. Sow Some Wild Oats

Don’t have to jump into thesis; take a few years to explore other areas (even completely unrelated ones)

*Provides good background & perspective*

*You might find something interesting*

*You might find related problems to solve*

*You might have fun*

*You will not get bored of your PhD topic quite as quickly as otherwise*
10. Extracurriculars: Do Them

Learn to play an instrument;
Play sports (contact & non-contact);
Learn a foreign language

Being busy forces prioritization & focus

Non-research activities are therapeutic (especially contact sports)

HOWEVER: When you’re old & complaining about joints, you won’t play much football

Become an interesting person
9. Collaborate with Others

Most people see advisor once/week, but need feedback => COLLABORATION (it also gets the work done faster)

Bounce *ideas* off people

Finish research papers 2-3 times *faster*

Have someone to go to *lunch* with ... :)

Not easy to start late in the PhD process
8. Old vs. Young Advisor

OLDER ADVISOR:
Typically has more money, more students, more contacts, less time. Perhaps better job opportunities after graduation? Perhaps less direction?

YOUNGER ADVISOR:
Typically has less money, more energy, more time, fewer job contacts, less perspective. Perhaps more direction and personal interaction?
7. Job Market: PhD vs. MS

In Computer Engineering:

Ph.D. — Design
M.S. — Implementation
B.S. — Coffee-fetching

PhD’s are paid to THINK;
MS’s are paid to DO

PhD’s do not make MUCH more than MS’s

MS’s start making the money 2-5 years early
6. Read a Paper a Day*

Your job as a grad student is to ABSORB KNOWLEDGE like a SPONGE

Borrow & read *textbooks*

Read *conference proceedings* (good ones)

Read *journals* (good ones)

(For Computer Architecture:)

• Join ACM SIGARCH, SIGMICRO, SIGOPS
• Good research delivered to your door

* Thanks to Don Yeung
5. Do Excellent Research

Point of Research: ask & answer questions, NOT build & evaluate implementations

Asking & answering questions is \textit{SCIENCE}

Building & evaluating implementations is \textit{ENGINEERING}

You will be remembered mainly for your contributions to \textit{SCIENCE}
(there are many counterexamples, however)

\textit{EXCELLENT RESEARCH} \neq \textit{COOL IDEA}

\textit{EXCELLENT RESEARCH} = \textit{ANY IDEA DONE WELL}
4. Give Excellent Talks

Your presentation of ideas is how many will judge you, so do it well.

*Begin AT LEAST one month before date*

*Give a practice talk*

  *Take suggestions*

  *Rewrite the talk*

  *Repeat*

*Big fonts, diagrams wherever possible, use of COLOR seems to work well*

*(Normally, I use LOTS OF DIAGRAMS)*
3. Write Excellent Papers

Your presentation of ideas is how many will judge you, so do it well. Remember: your papers will last forever.

*What papers do you cite frequently?*

*What papers do you re-read?*

*EMULATE THESE PAPERS*

*Aim high, but have fun (Banff, Ireland, etc.)*

- *Chance to travel on advisor’s tab*
- *Don’t do too many workshops (or if you do, don’t list them all)*
2. The Point of the PhD

To push the boundaries of what we know
[Requires looking at one topic in excruciating detail]

RESULT: you can distinguish between what is known and what is not known—you are able to ask questions that are not answered.

Your thesis will not save/conquer the world; you will be lucky if 10 people read it. DO THE MINIMUM NECESSARY.

Your research is disseminated through your papers, not your dissertation

Treat your dissertation like a BIG paper

That’s it.

If you try to conquer/save the world, you will graduate in roughly 15 years, or drop out in frustration
What to Expect:

It is not COLLEGE++

COLLEGE

Here is what you should know. Learn it.

GRAD SCHOOL

Here is what we know. Find out more.

Focus: LEARNING/DOING ON YOUR OWN

IMPORTANT ITEMS:

• Your advisor — time? direction?
• Your research area — interesting?
• Your research group — collaborators?
In Review:

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9. Collaborate with Others
8. Old vs. Young Advisor
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6. Read a Paper a Day
5. Do Excellent Research
4. Give Excellent Talks
3. Write Excellent Papers
2. The Point of the PhD
0. It is not COLLEGE++ (it’s better :)}