Navigating the Early Years: Surviving the Post Doc Years

Angela Peace
Texas Tech University

September 2022
Early Career Workshop
12^{th} ECMTB Heidelberg

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- Attended **conferences** and workshops

The Third SIAM Gators Conference March 2014
SIAM *University of Florida*

Poster presented: A stoichiometric producer-grazer model: incorporating the effects of excess food-nutrient content on consumer dynamics

2013 Workshop for Young Researchers in Mathematical Biology (WYRMB) Aug. 2013
Mathematical Biosciences Institute *The Ohio State University*

Talk title: A stoichiometric producer-grazer model incorporating the effects of excess food-nutrient content on consumer dynamics. Travel support awarded by the Mathematical Biosciences Institute.

AARMS Mathematical Biology Workshop July 2013
Atlantic Association for Research in the Mathematical Sciences *St John's, Newfoundland Canada*

Talk title: Stoichiometric producer-grazer models. Travel support awarded by NSF.

Society for Mathematical Biology June 2013
Annual Meeting and Conference *Arizona State University*

Talk title: The effects of excess food nutrient content on consumer dynamics in a Lotka-Volterra type model.

Association for the Sciences of Limnology and Oceanography Feb 2013
ASLO 2013 Aquatic Science Meeting *New Orleans, Louisiana*

Talk title: A stoichiometric producer-grazer model incorporating the effects of the knife-edge.

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Woodstoich August 2014
5 days of peace and stoichiometry *Sydney, Australia*

A workshop on ecological stoichiometry and the related framework nutritional geometry. I participated on a team project on exploring connections between ecological stoichiometry and rapid evolution. Travel support awarded by NSF.

WhAM! A Research Collaboration Workshop for Women in Applied Math Sept 2013
Institute for Mathematics and its Applications *University of Minnesota*

A workshop on dynamical systems with applications to biology and medicine. I participated on a team project on 'Intermittent Preventive Treatment and the Spread of Drug Resistance to Malaria'. Travel support awarded by Institute for Mathematics and its Applications.

Mathematical Problems in Industry June 2013
29^{th} *Annual Workshop* *Worcester Polytechnic Institute, Massachusetts*

I participated on a team project collaborating with the company Pall on Changes in Capture Efficiency Due to Folding. Pall makes very fine porous filter media and are interested in predicting the changes that may occur in the ability of the membrane to capture particles of various sizes when the filter is folded. Travel support awarded by Institute for Mathematics and its Applications.

European Study Group with Industry April 2013
91^{st} *Annual Study Group* *University of Bristol, England*

I participated on a team project collaborating with the Norwegian company Teknova/Elkem on modeling heat transfer and solidification in the process of continuous casting of silicon. Travel support awarded by Oxford Center for Collaborative Mathematics.

UK Graduate Modelling Camp 2013 April 2013
5^{th} *Annual Modelling Camp* *St. Anthonys College Oxford, England*

I participated on a team project on assessing molecular properties for oral drug delivery. Travel support awarded by Oxford Center for Collaborative Mathematics.

Mathematical Problems in Industry June 2012
28^{th} *Annual Workshop* *University of Delaware*

I participated on a team project on Fuel Cell Assembly Process Flow for High Productivity. Travel support awarded by Institute for Mathematics and its Applications.

Graduate Student Mathematical Modeling Camp June 2012
9^{th} *Annual Modeling Camp* *Rensselaer Polytechnic Institute, New York*

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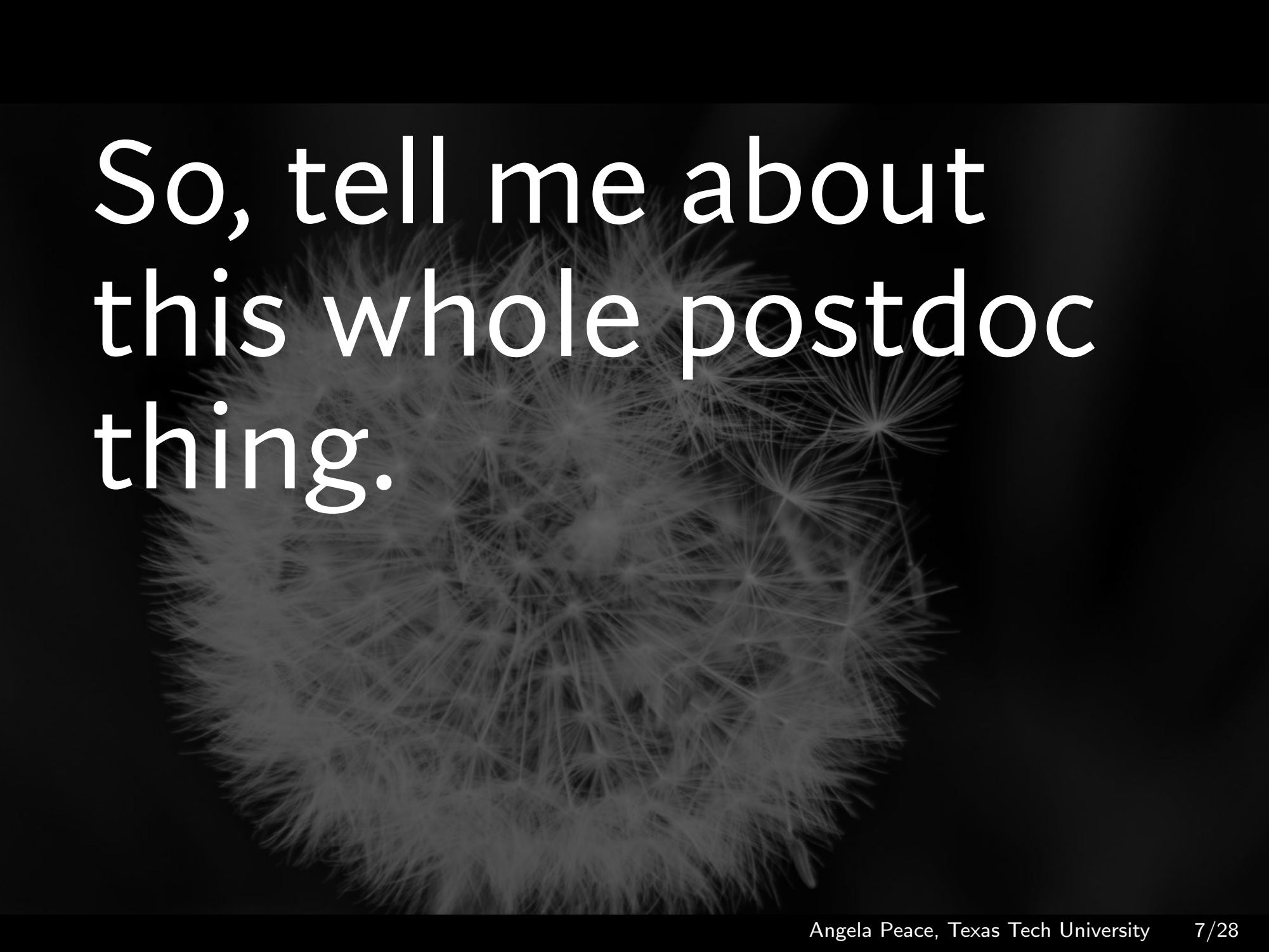
NIMBioS
National Institute for Mathematical and Biological Synthesis


So, tell me about this whole postdoc thing.

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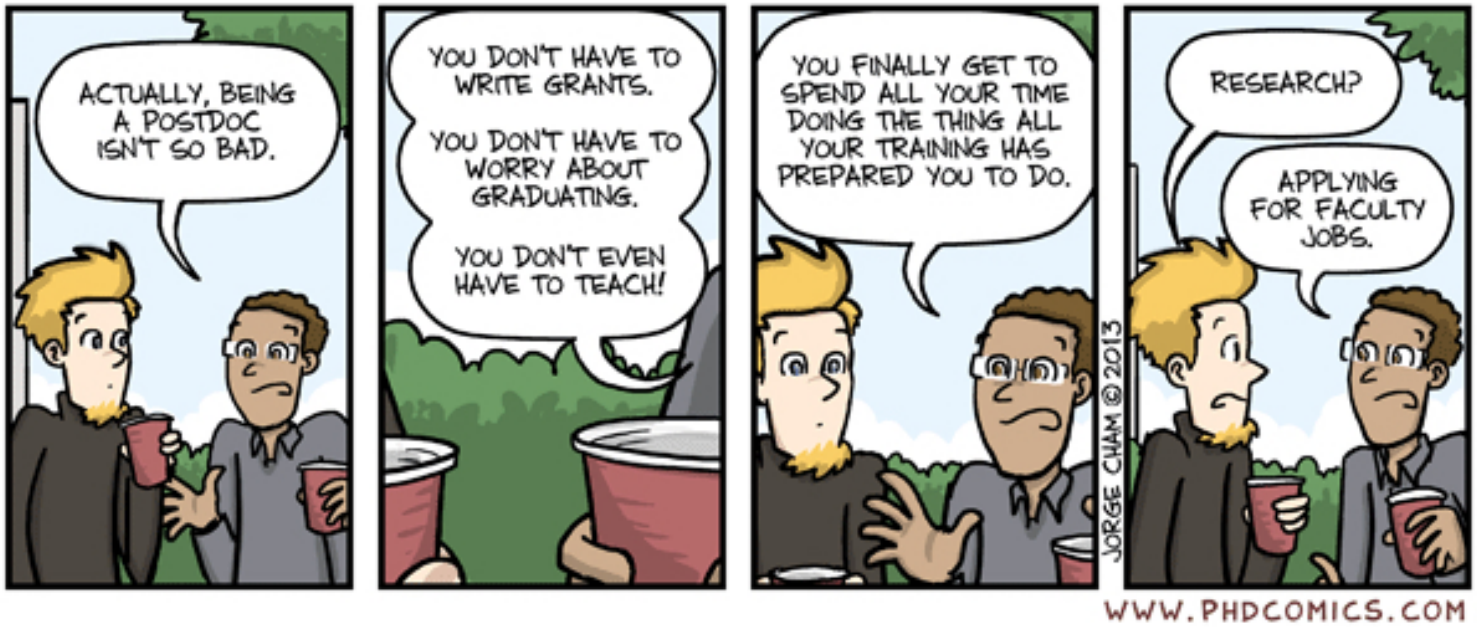

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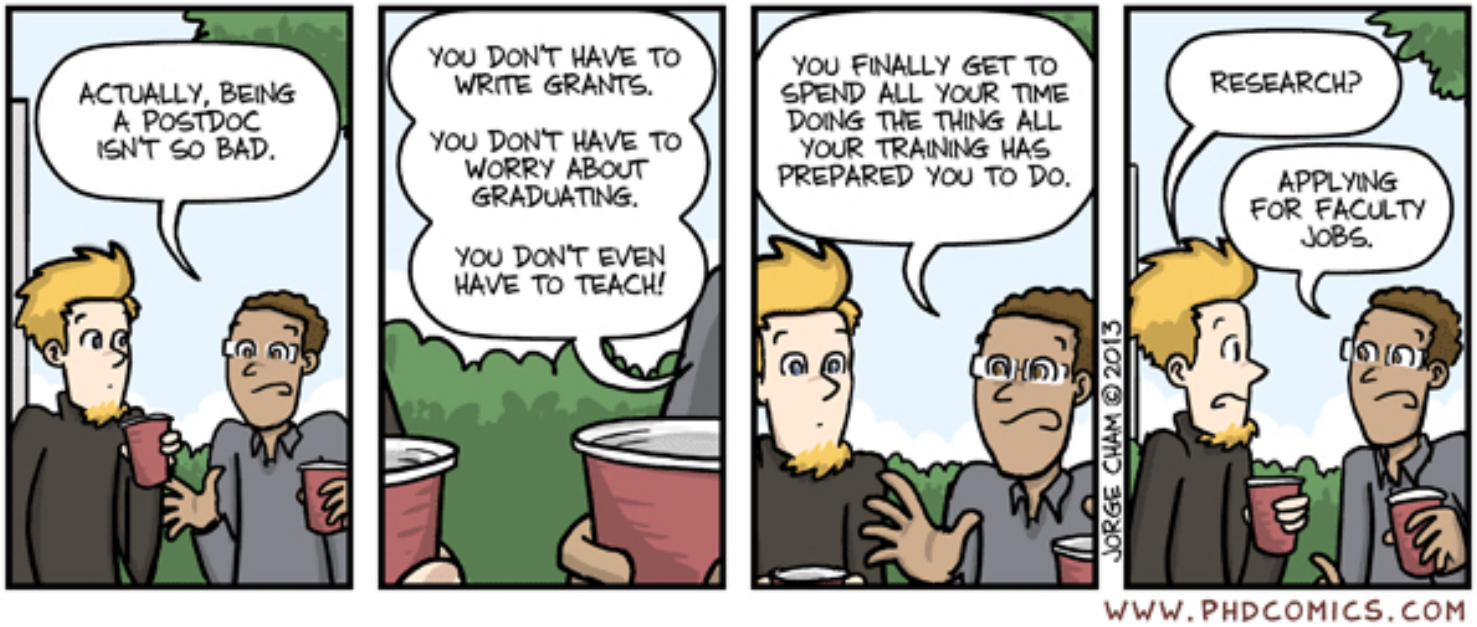
- Another main goal is to get another job
- Both stressful applying for tenure-track positions and a lot of fun!



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Thank you: Amanda Laubmeier, Allison Lewis, Neha Murad, Rebecca Everett




Postdoc with a professor

- Jumped into projects, resulting in publications
- Opportunities to mentor undergraduates and graduate students
- Research focused with some teaching
- Relationship with mentor
- Rely on mentor for funds for travel, publishing, etc.
- Didn't get to work on my own research, develop skills of defining my own questions
- Grant writing experience depends on mentor
- Seek out professional development (get on email list)
- Apply: Anytime! Networking can make the difference.

NSF Postdoc fellowship

Propose a research project with a sponsoring scientist

Apply: October

Supports research fellowships and instructorships for postdoctoral scientists in areas of mathematics and statistics.

Synopsis

The purpose of the Mathematical Sciences Postdoctoral Research Fellowships (MSPRF) is to support future leaders in mathematics and statistics by facilitating their participation in postdoctoral research environments that will have maximal impact on their future scientific development. There are two options for awardees: Research Fellowship and Research Instructorship. Awards will support research in areas of mathematics and statistics, including applications to other disciplines.

Upcoming due dates

Full proposal

2022

October 19 - Deadline date

Third Wednesday in October, Annually Thereafter

Program guidelines

Award information

subject to availability of funds.

Postdoc at a department

- Research and teaching experience (e.g., 2-1 load)
- Might have research mentor
- Develop skills to start your own research, define questions, etc.
- Time to develop research stemming from your dissertation
- Published less than joining existing project
- Lonely since not many other postdocs
- Actively seek our recourses, opportunities, professional development
- Apply: October/November

Postdoc at an institute

- For example:
  NIMBioS (National Institute for Mathematical and Biological Synthesis)
  MBI (Mathematical Biosciences Institute)
  iDiv (German Centre for Integrative Biodiversity Research)
- Outside of official departments
- Cohort of postdocs (e.g., 8-10, a lot of fun!)
- Multiple mentors (e.g., 2 official mentors)
- Encouraged to collaborate but still in charge of own main project
- Develop skills to start your research, define questions, etc.
- Broaden network, centers host working groups/workshops
- Professional development workshops

Visiting Teaching Assistant

- Position usually exists because temporarily replacing somebody on sabbatical or department is short-staffed
- Primary focus is teaching
- If you want a tenure-track job, you'll want to keep up with some research on the side
- Senior thesis, REU (Research Experience for Undergraduates), independent study
- Great way to figure out what it is you're really looking for in a college before fully committing
- Get your feet wet as a teacher without a lot of other responsibilities, develop teaching philosophy
- Institutions can be very supportive of their visitors or treat them more like disposable labor

Postdoc in Industry

- Get to see real life applications of the models you build
- Faster turn round time to see fruition of your work into real world
- Work with people with diverse skill sets, different fields, etc.
- Might be only mathematician
- Higher pay, better corporate perks, better work-life balance
- More funding available for learning and development opportunities
- Not a lot of flexibility in choosing your project
- Publishing takes longer (more approvals)
- Company jargon and culture different to academia
- No grant writing nor teaching experience

Things to think about

- Hard to get tenure-track position without postdoc position(s)
- Work on your own research vs. join a project
- Research vs. teaching
- Publication / travel funds
- Professional development opportunities, postdoc groups (not just in department)
- Mentoring opportunities
- Length of postdoc position (1 year is very short turn-around)
- Get people to observe your teaching
- Try to teach upper level classes
- Parental leave

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Work-life ~~balance~~ rhythm

- Two-body problem, my spouse stayed working in AZ while I lived in TN.

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Work-life rhythm:
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What I wish I had done differently as a postdoc:

- Started learning about grant applications
- Prepared for rejections
  - Seen more examples, from the professors, of their rejected papers and declined grant applications

Being a new assistant professor

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So much to do!

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I've been training for this.

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I've been training for this. Haven't I?

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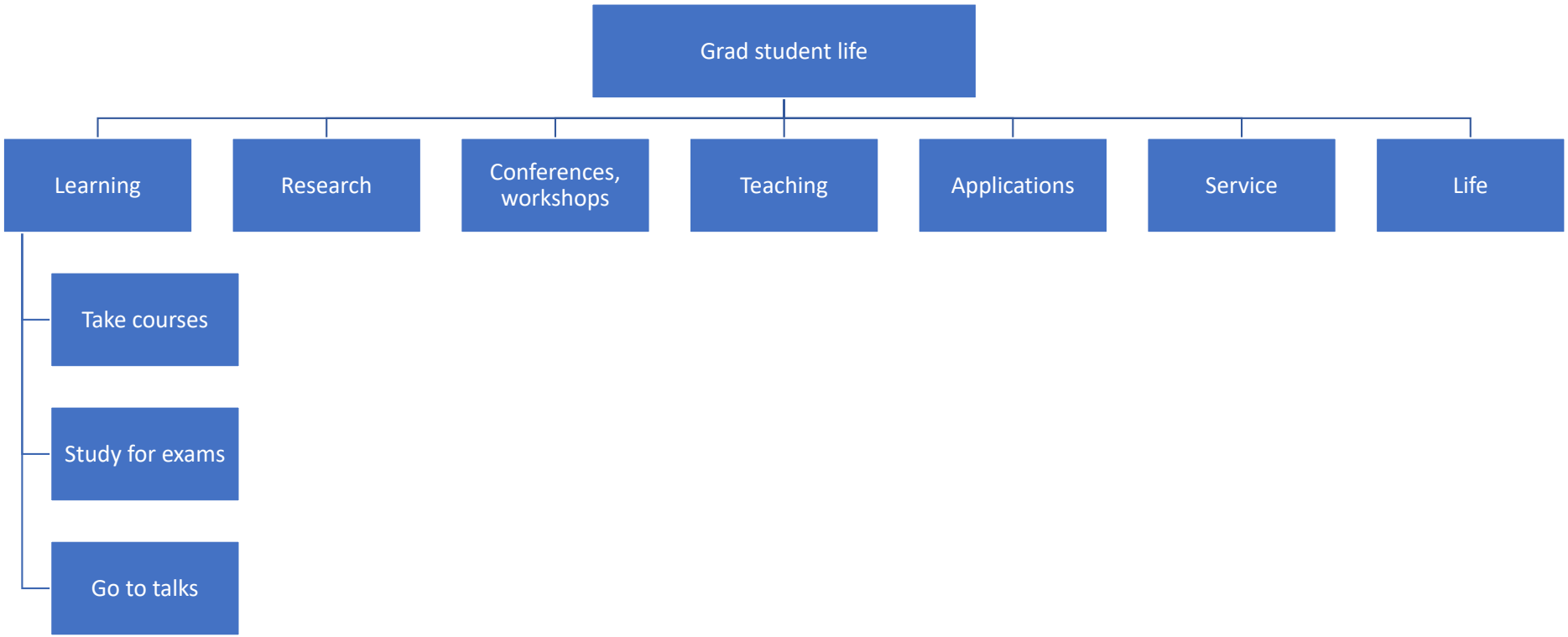

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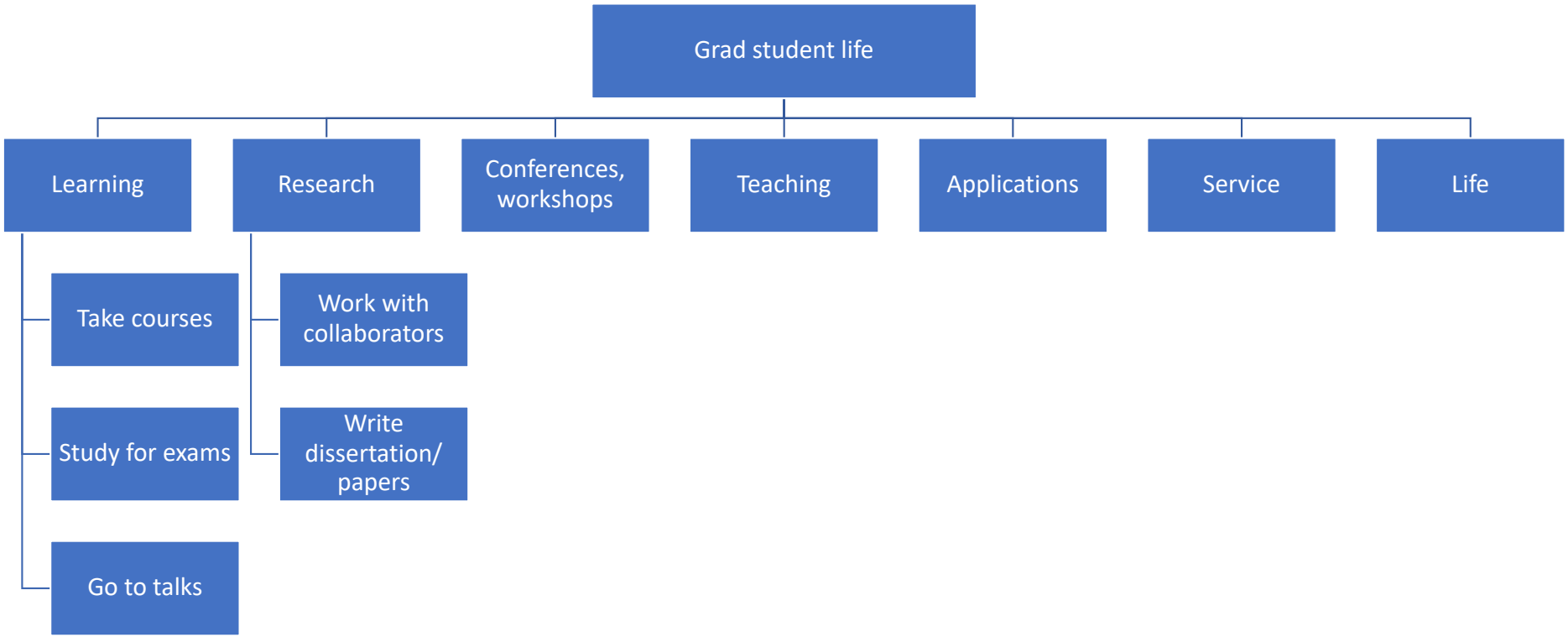

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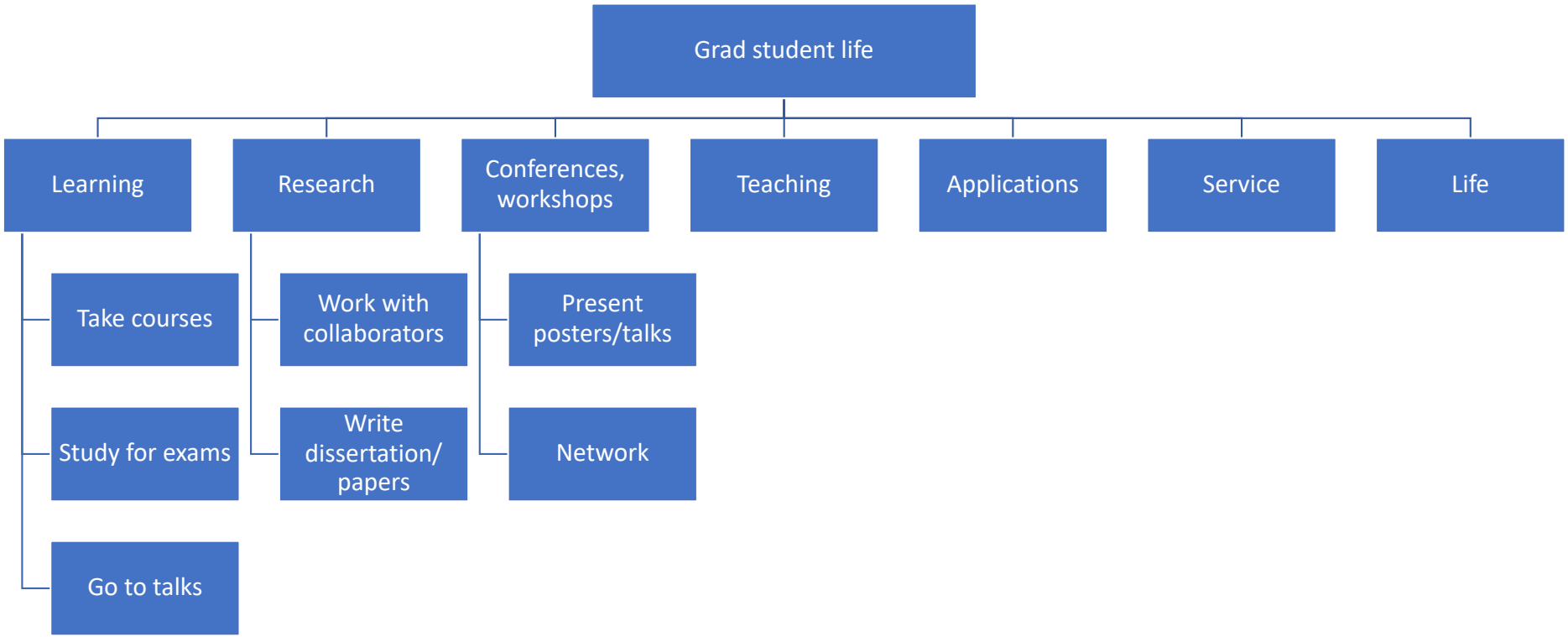

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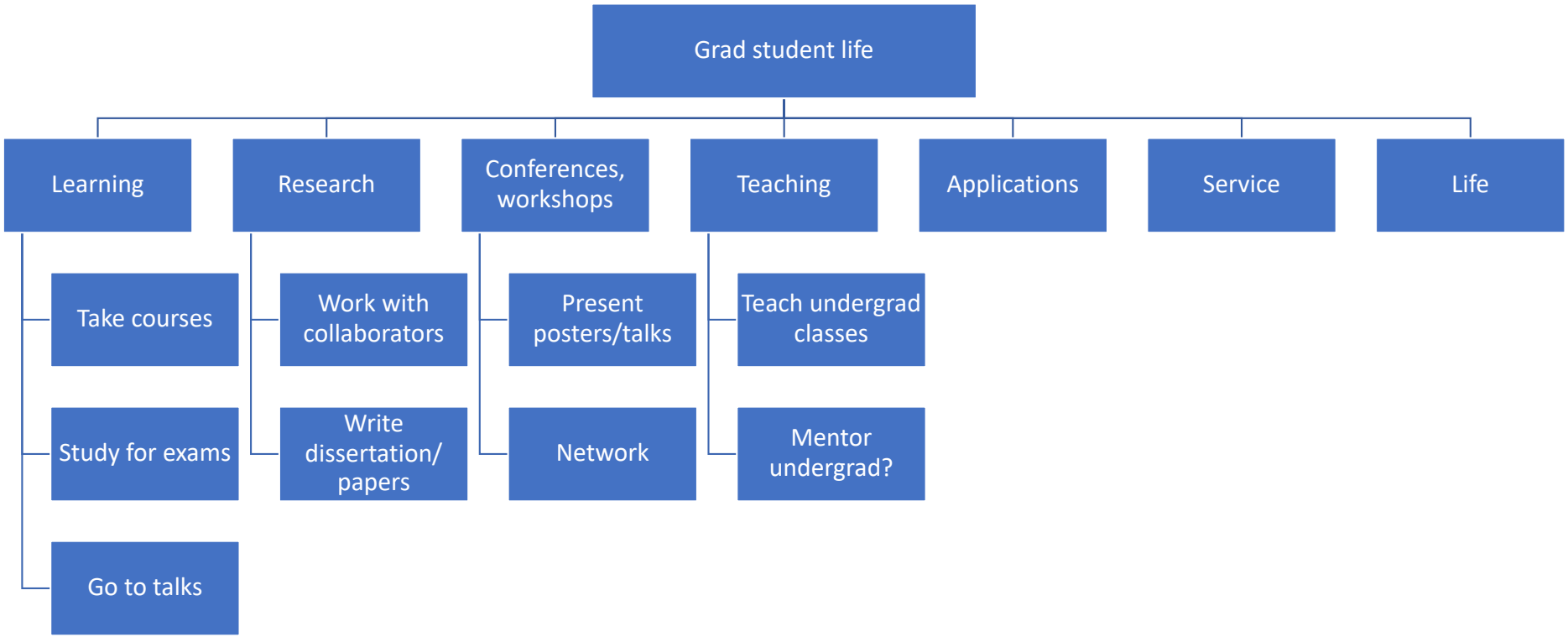

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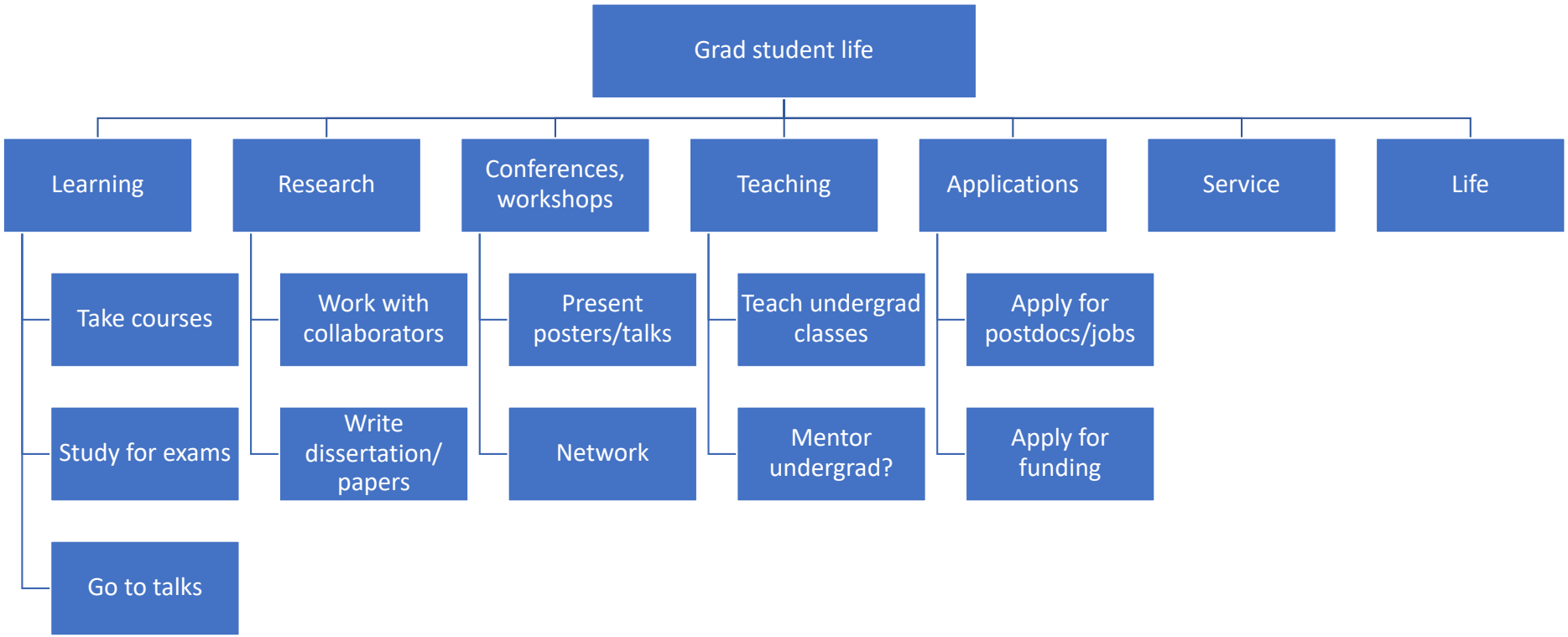

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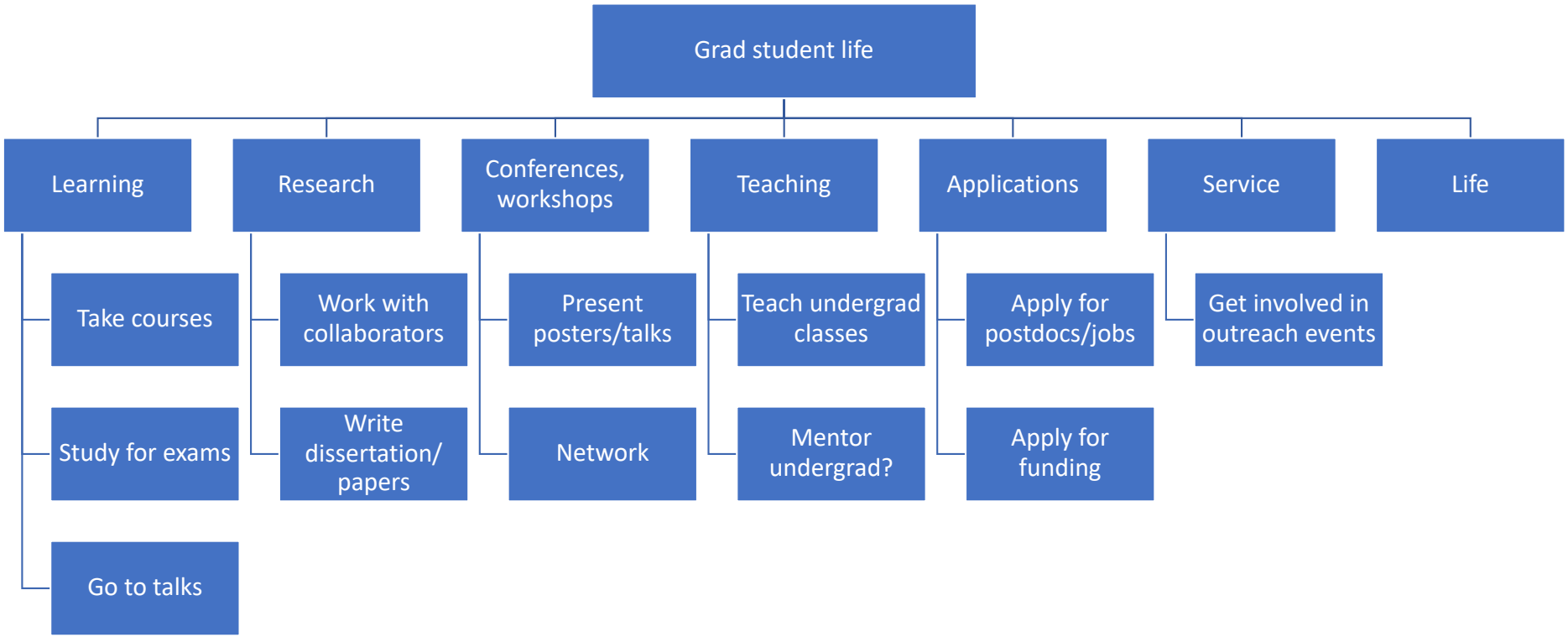

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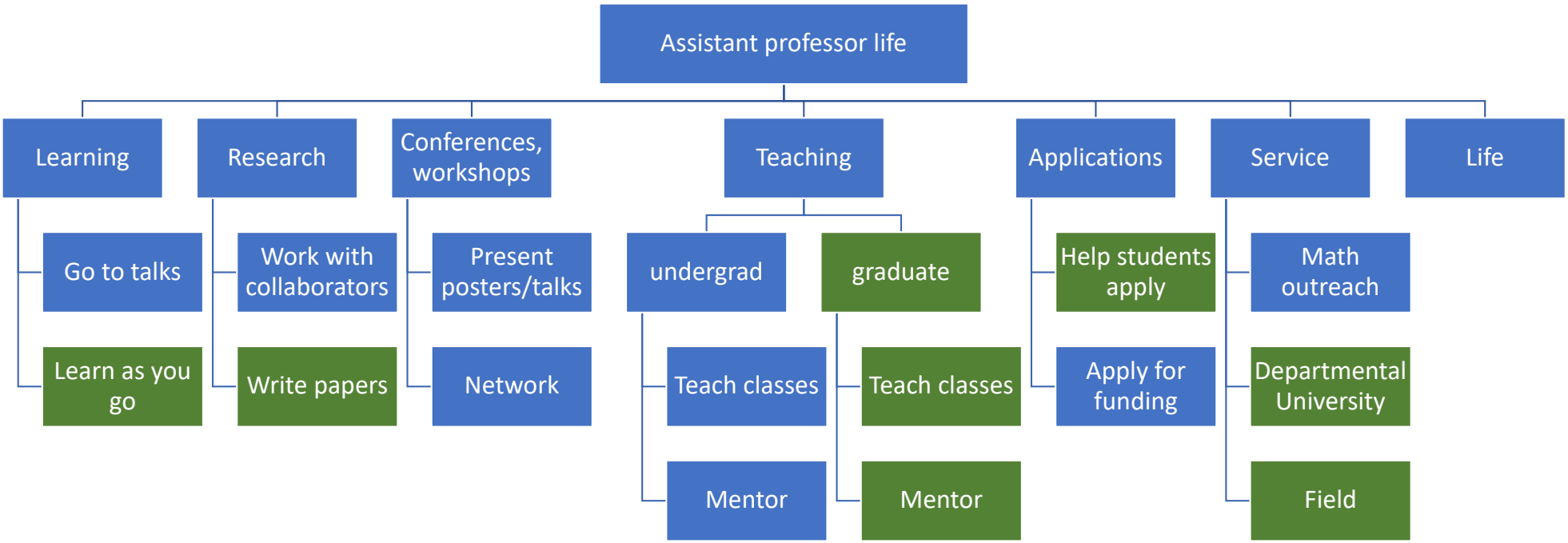
Things certainly shift around - but lots of the skills are already there. Use your postdoc years to grow where you need to.



Work-life rhythm: A mathematician and a mom

- Started my position in August 2015
- Had Oliver in July 2016.
- Had Benjamin in April 2019

Work-life rhythm: A mathematician and a mom

Recommendations:

- Shift expectations and allow them to KEEP shifting
- Look for resources!
  - Family leave policies?
  - Travel support for conferences?
  - NSF career-life balance initiatives
  - Can't find what you need? Get the ball rolling for others!

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What I wish I had done differently:

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- Set aside more time for pregnancy

I love my job

- I work on cool science with people I like
  - Life is too short to work on boring projects with people you don't like
- I like teaching, mentoring, traveling
- I still struggle with rejections and its difficult to find the rhythm - but I do love my job.

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What I'm working on doing differently now:

- Devoting more time to my writing skills
- Trying to aim for rejections
  - Failure is an important part of life and success- dont take it personally.
  - Failing to fail means I probably didn't aim high enough
- Learn when/how to say no
  - I get excited about new ideas...but I am busy

Thank you and good luck!

Angela Peace, PhD
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Texas Tech University