Learning how to learn

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25.12.2021

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About me/bio

Education

- BEng in Petroleum Engineering, Baku Higher Oil School / Heriot Watt University, 2013 – 2018
- MSc in Reservoir Evaluation and Management, Baku Higher Oil School / Heriot Watt University, 2018 – 2020
- PhD in Petroleum Engineering, University of Southern California, 2021-

Industry experience

- Summer intern, SOCAR, 2015
- Summer intern, SOCAR, 2016
- Summer camp participant, Schlumberger, 2016
- Geoscience intern, BP AGT, 2017
- Reservoir Engineering intern, BP AGT, 2019

Involvement in SPE Azerbaijan

- Young Talents program, 2016-2018
- Student Symposium, 2017
- Petrobowl Finals, 2019

1. Introduction & Motivation

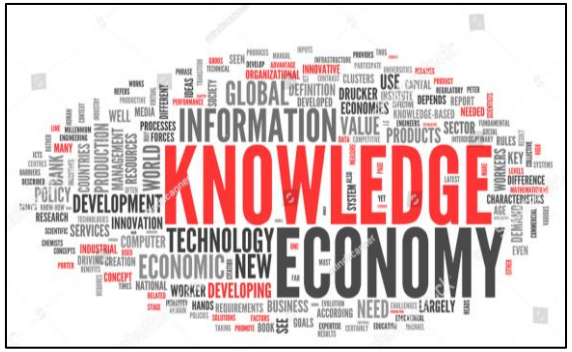
Introduction

- What are you learning now?
- How effectively, do you think, are you learning?
- What effective learning strategies have you developed so far?
- What would you like to learn in near future? Why?
- How do you plan learning that thing?

Motivation

Move to knowledge-based economy

- In the information age, global economy has moved towards the knowledge economy (Investopedia)
- Thinkers for a living: e.g. academics, engineers, lawyers

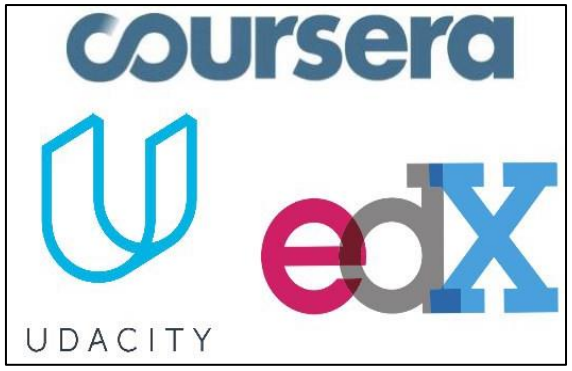


Volatility of job market

- Triggers: automation & optimization, pandemic & recessions, globalization & digitization
- Over 22 million jobs disappeared at the start of the pandemic — but only 12 million have so far been recovered. (NBC news)

Increasing need in people who can learn fast and independently

- 70% of programmers are self-taught (2019, Geek for Geeks)
- Rapid growth in the number of online degrees & courses



2. Workflow for effective learning

Workflow for effective learning

1. Motivation & goal setting

- Have a very clear idea / vision about why do want to learn that particular thing
- SMART goals: specific, measurable, attainable, realistic, time-bound
- Visualize success
- Along the way, goals might slightly change and that is perfectly fine

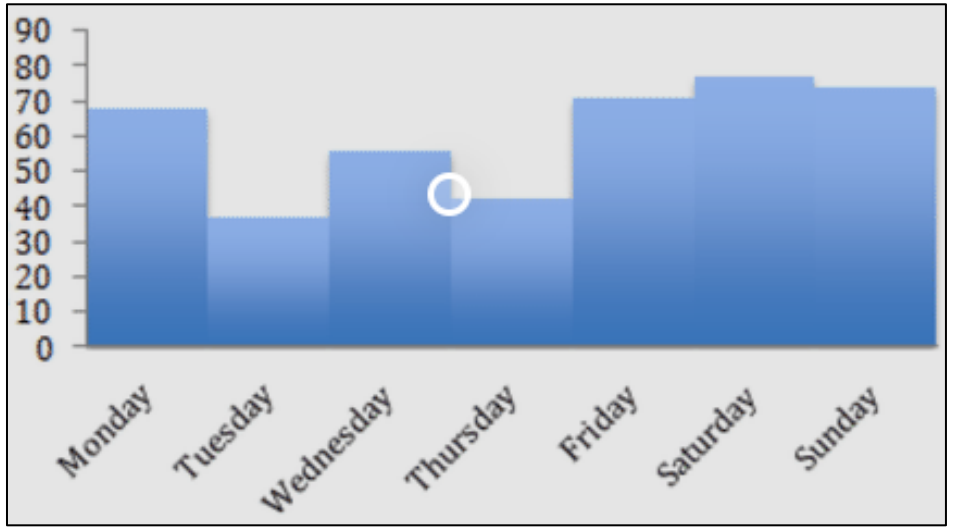
2. Review of resources

Review and define resources that you are going to use

- First, try to get a big picture view
- Consult, network, brainstorm with experts & experienced people
- Read blogs, posts about reflections of people who have gone through similar goals
- Find and locate the best books/courses/blogs/videos on topic
- Do not do very exhaustive search / spend too much time on review of resources

3. Planning

- Settle on few resources that you are going to use
- Estimate the required time to execute the plan
- For best results, distribute total time spent evenly
- Have concrete agenda for each week/month/quarter/year
- Some modifications/deviations from plan are usually acceptable



4. Execution of plan

- Stick religiously to your plan

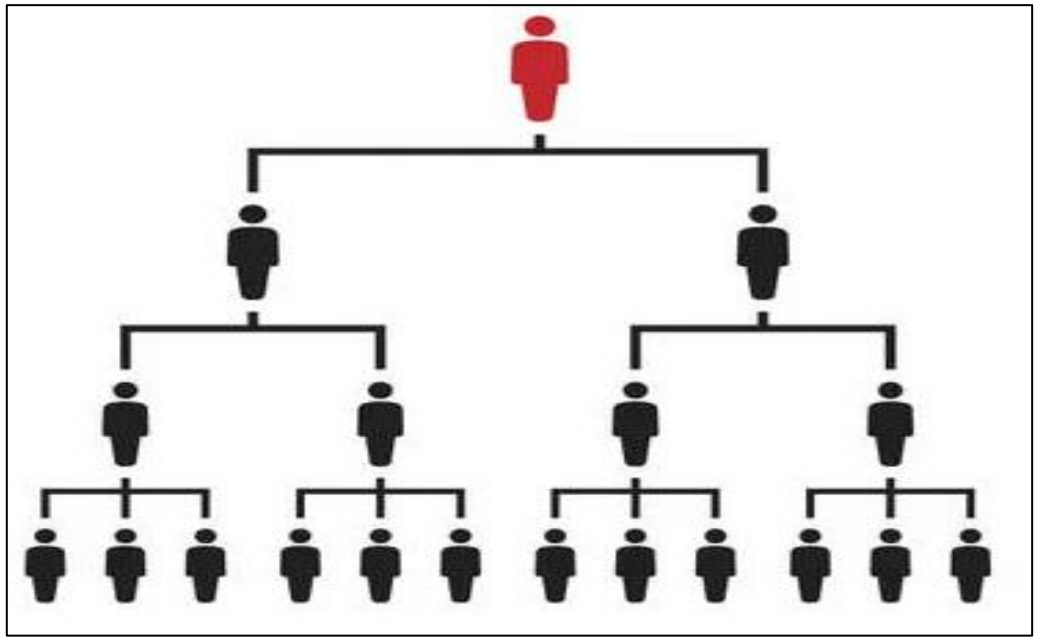
5. Results and their analysis

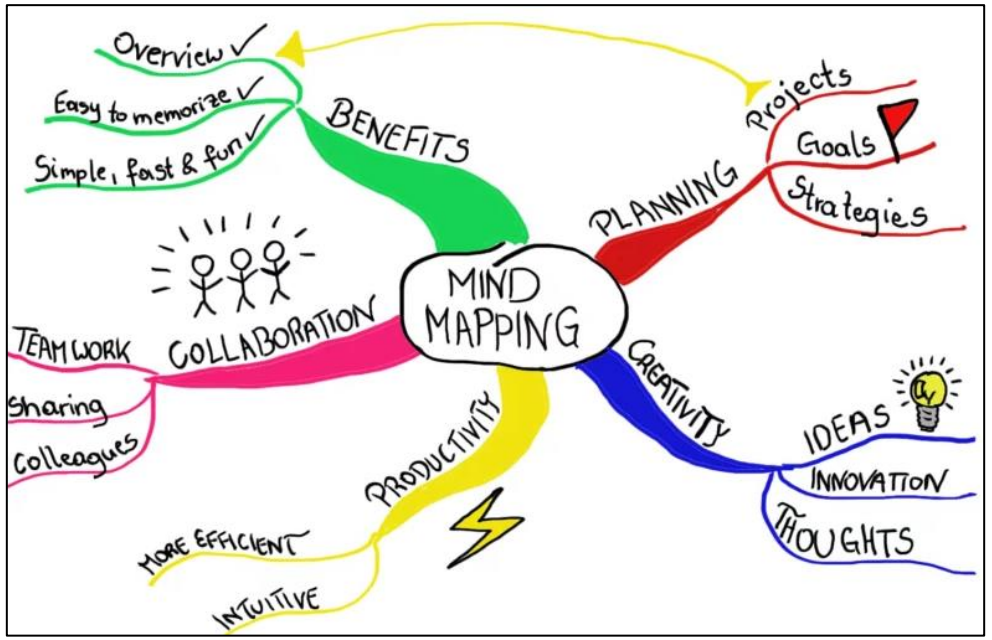
- Make sure you have a concrete deliverable – degree, report, presentation etc
- Try to present your results to experienced people
- Squeeze out as much feedback as possible
- Summarize the learning process and reflect on what went right and wrong
- Incorporate outcomes of reflection for next learning projects

3. Some techniques for effective learning

Hierarchical learning

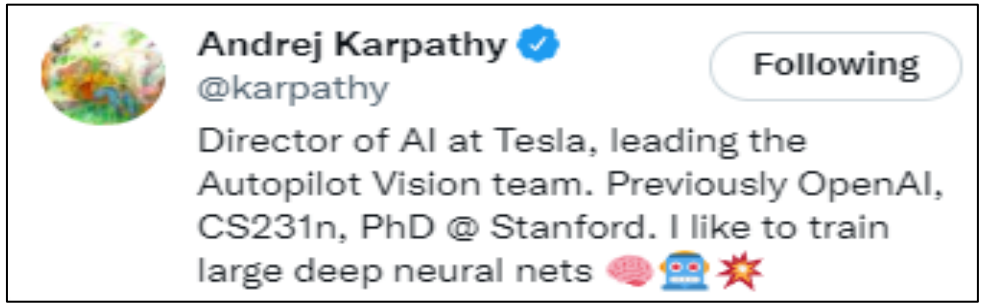
- Big picture and fundamentals first, add details later
- Sort the information while obtaining
- Develop mindmap, connect discrete pieces of information
- Details should have something to hang on

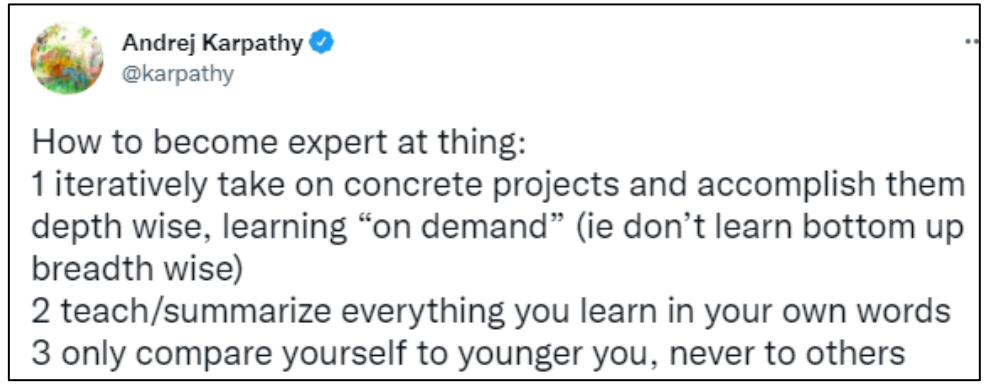


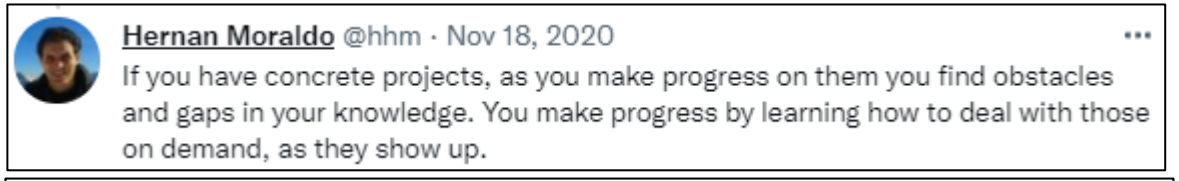


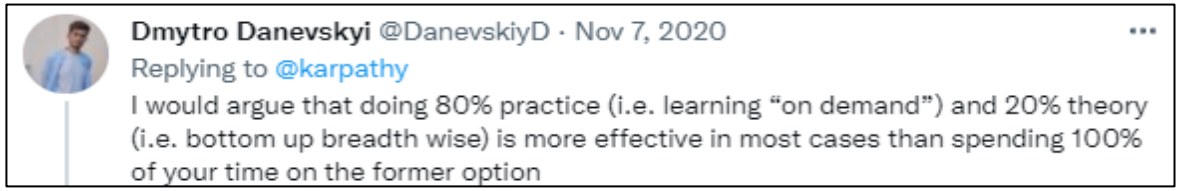
Learning on ‘demand’ / by doing

- Learning things when you need them
- Learn actively by engaging with material
- Recalling instead of review & ‘Get hands dirty’
- But do not ignore theory



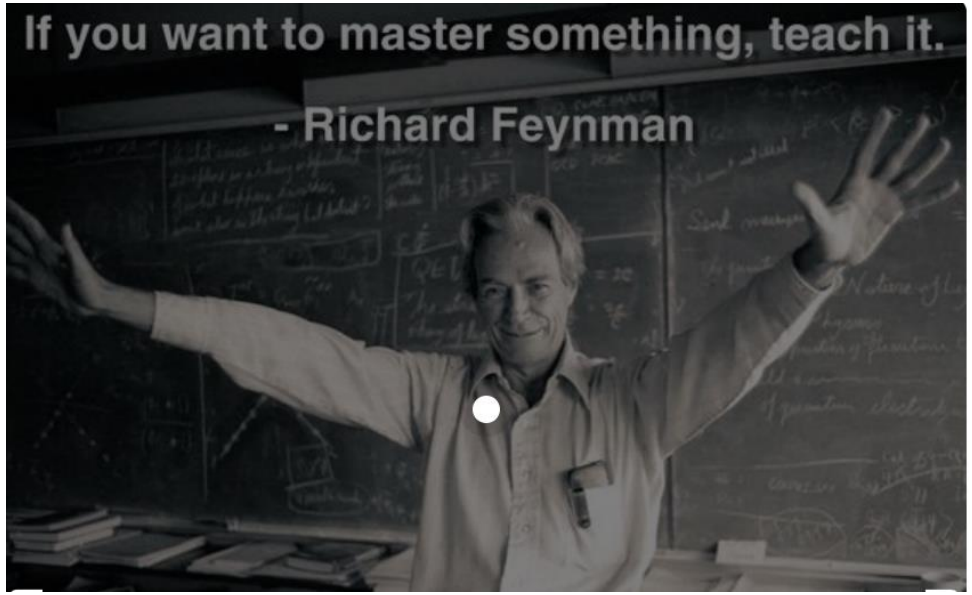






Teach

- Teaching forces you to develop a deeper understanding
- Summarize what you read/learned in your own words
- Organize information into coherent structure while teaching
- Make sure to really understand stuff
- Avoid memorization without understanding

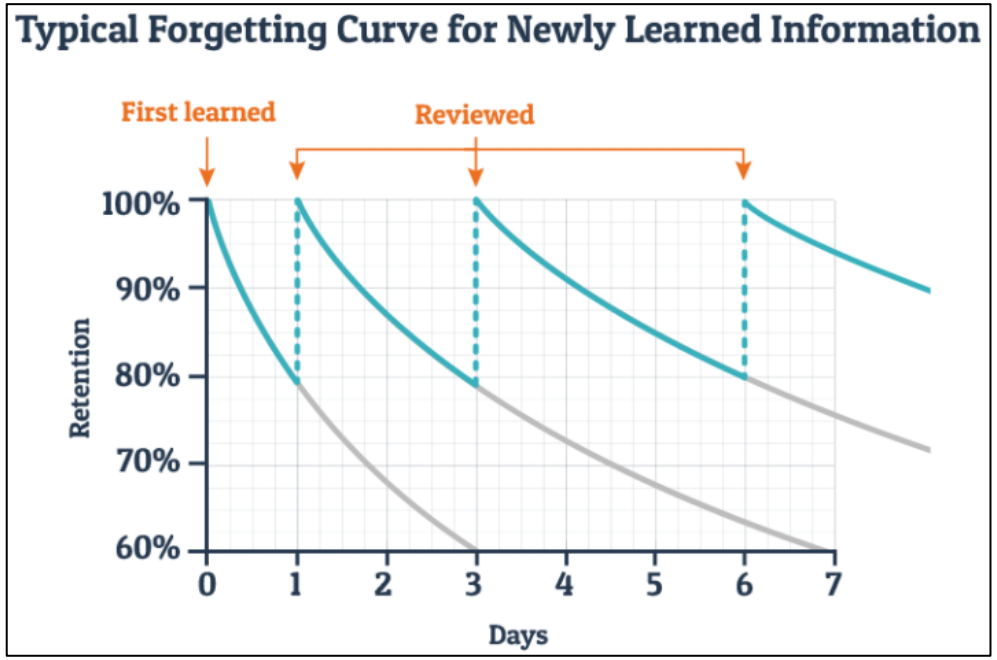


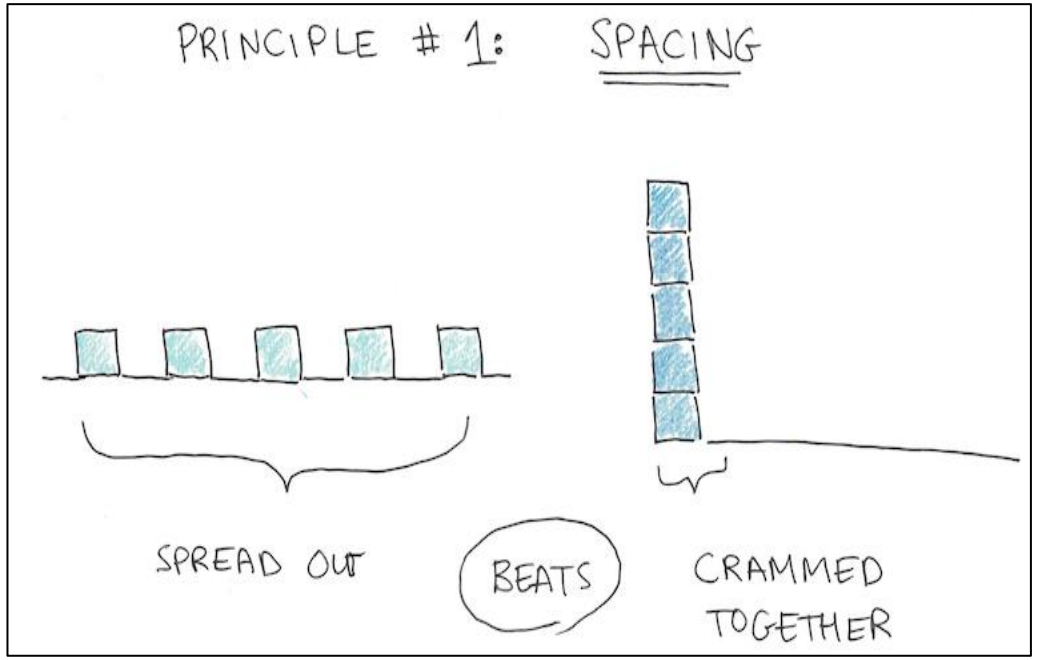
Automate & Optimize your learning

- Develop ‘templates’ for learning/doing different stuff: e.g. reading, programming
- Avoid running on ‘autopilot’ once to run on ‘autopilot’ for next times
- Always spend some time to reflect about your learning / progress

Spaced repetition

- When learning new concepts, brain steadily forgets them
- Solution is to review the learned concept/info ASAP
- As you progress, review time & review interval go down
- Spaced & frequent learning over cramming / long infrequent learning





Productivity

- Effectiveness of learning, naturally depends also on one's productivity
- As you progress through life, develop your own productivity tricks

Some general tips

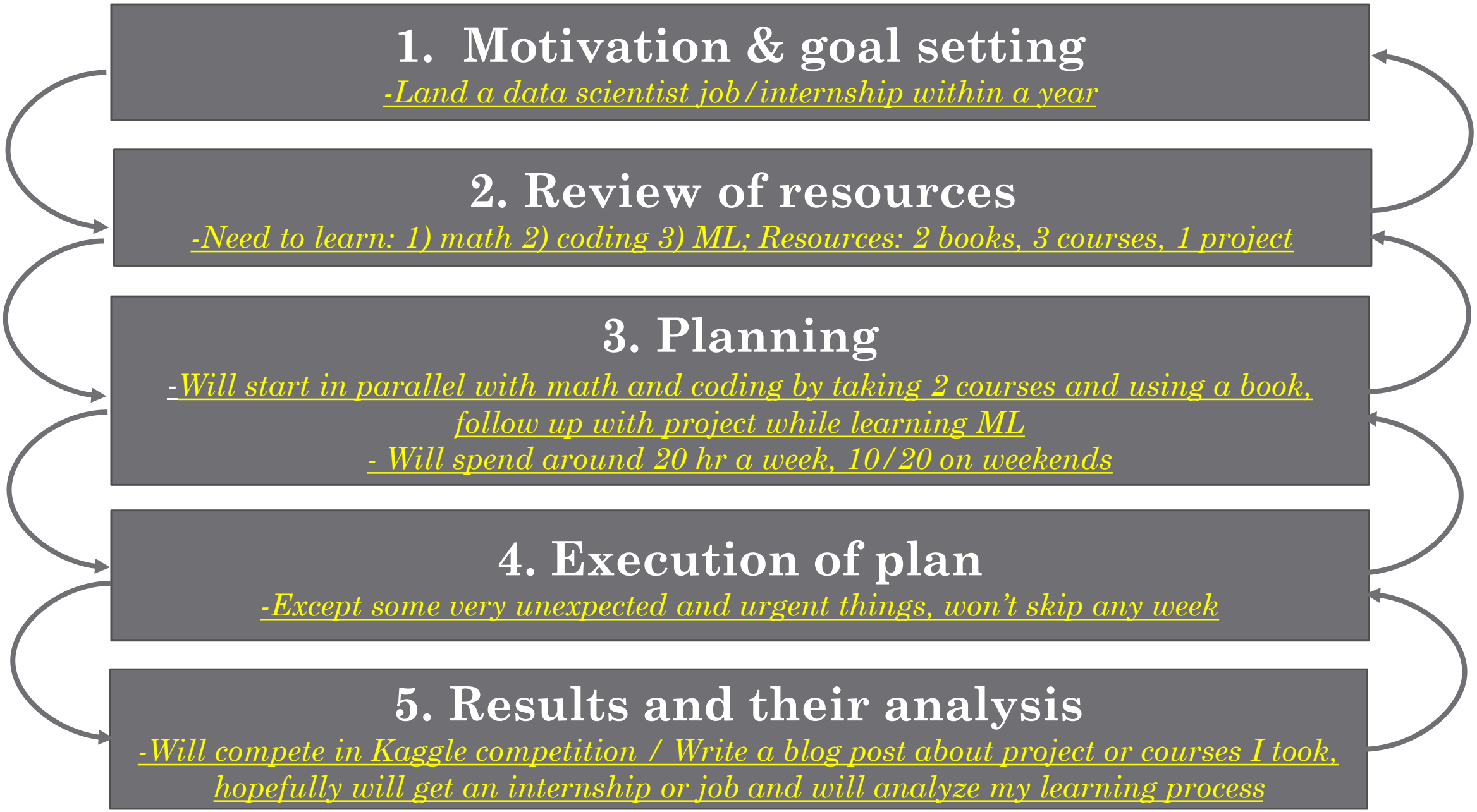
- Basics: eat well, exercise, sleep well
- Find your optimal time windows & create your routine
- Optimize your day: hardest things first, manual/easy tasks at the end
- Do not multitask, focus intensely, avoid distractions

4. Case study: Learning Data Science

Data Science

- Short definition: Extracting value from data by using scientific methods
- Relatively new field with a promising career outlook
- Lots of applications in industry, academia, government sector, non-profits
- A lot of confusion about its scope, roles, tools, required knowledge for roles

Learning Data Science: example roadmap



5. Useful resources & QA

Useful resources

- **Blogs / twitter accounts / youtube videos of top scientists / entrepreneurs**
- https://www.scotthyoung.com/: website of relatively known writer on this topic
- Learning how to learn (Coursera): around 2 million students took this course (2017)

Stay tuned!

Possible future sessions

- Presentation about big picture view of Petroleum Engineering and Geosciences
- Presentation about some aspects of doing PhD / doing research
- Presentation about some aspects of Machine Learning and Data Science

QA

Thanks!

Questions??