

University of Puerto Rico of Humacao

Department of Chemistry

Unit 1: Getting started in research

BOOK EXERCISES

Leylanie Mendoza Vazquez

leylanie.mendoza@upr.edu

QUIM 3045-E01

Unit 1: Being looked at in research

PLANNING A CAREER IN SCIENCE

Do exercises 1A, 1B and 3A of pages 6 and 7 of your books.

1A. Page 6

1. Why did you choose a career in science?

I chose a career in science because it's the area I really like. I always thought I liked mathematics the most. However, when it was time for me to choose a university career, I had many doubts. I knew I liked math, but I was studying accounting in vocational school and even though I was super good at it I wasn't passionate about it, I didn't like it. I felt that business wasn't my thing. So I thought maybe math wasn't my passion but a skill I possessed. So that's when I started leaning towards science because I also liked it even though it was a little more work than math. Science seemed more interesting to me and of course it's not the same to like something because it seems easy or you understand it faster, as it happened to me with mathematics, than to like something because you are really interested in learning more about it, as it would be in the case of science for me.

2. What field of science are you currently working or studying in?

I was mainly going to go to college for biology, but I could not because of some requirements that I did not meet at the time. So, I went in for the chemistry program since both are science based. Then I realized that it was the best decision I could have made since it was exactly what I was looking for in a career, more calculations, less theory, science, motivation and passion.

3. What would you like to do next in your work or studies?

At the end of my studies, I would like to fulfill each of my dreams, which are not ambitious enough, but more realistic. I would mainly look for a job in the field I graduated in to start my savings. Later I would like to become totally independent. I mean, having my own apartment and being able to support everything that comes with living on my own as an adult. After that, I have in mind to continue with my savings to buy my own house when I consider starting a family, but in the meantime my life would be based on 3 things: work, save and live life. What is living life for me? For me living life is about creating unforgettable moments with the people you love and with the people who love you by simply spending time together no matter the place. The important thing is to create memories that mark you for life, both positive and negative, because from them you learn to be better every day.

1B. Many scientists continue their education in other countries. The following table summarizes higher education for science in the United States. Make a similar table for your country and then answer the following questions:

1. Is science education in the United States like scientific education in your country?

The education here is pretty much the same as in the US since we belong, but we are not part of them and therefore not all the rules are the same even though most of them are governed by theirs.

2. If you decided to study in the U.S., what grade would be best for you?

If you decide to study in the U. S., I will graduate with a Ph. D. because even though you can also get it here, it is given more importance than here in Puerto Rico. In Puerto Rico you can exercise either of these two positions, but they do not give much importance to what is the doctorate even knowing that it consists of a greater knowledge. Here they prefer to hire a staff with a bachelor's degree because it is less expensive than one with a doctorate.

3A. Page 7

1. What you enjoy most about working in your scientific field?

What I like most about chemistry is the importance of calculations. Everything has an exact or precise value and being able to mix that exactness and precision with the reason of science is what excites me about this area. In this field they are based on calculations for a theory. In other words, chemistry explains and calculates how to arrive at a result. However, in biology they give you pure theory of how the result is arrived at, for example, how living organisms function.

2. What you would like to do and not like to do next in your career?

After finishing my degree, I would love to get a job in a laboratory doing experiments or analysis. I know that to go to the lab you must first take the class and learn and then apply what you learn, but I love going to the labs, I feel that everything is easier to understand and do. It is for this reason that I would not like to end up working in a production company in the operations area because it would be very sad to realize that after so much effort in my studies it was not worth it.

3. Which of your past and present experiences are most relevant to your future in science?

Obviously, my most relevant experiences for my future in science are the labs taken in college and of course the internship that the class requires for graduation.

PROJECT SUMMARY

Do exercises 5a, 5c and 6a. Page 8 and 9 of you book.

5A. Section 7 of the form asks applicants to write a summary of the draft research proposal. Think of a research project in your area. In pairs, take turns to summarize the Project by following the instructions (1-6) DOWN

1. State the aims of your research
2. Define what the problem is.
3. Explain why your topic is worth researching.
4. Say what the expected outcomes of the research are.
5. Outline the procedure you will follow.
6. Outline how you will limit your investigation.

Acetaminophen in medicines

Usually, the medicines we take contain acetaminophen in addition to other chemicals. However, when making the pill it must meet the required amount of acetaminophen. This is important because depending on the amount we will have 3 results: that the pain decreases, that it has no effect or that it causes malignant side effects. Therefore, I decided to base my research project on the analysis of the amount of acetaminophen in medicines. This analysis is carried out with the HPLC instrument by diluting a sample (ground pellet) to pass it through the instrument. In the end, 500mg of acetaminophen is expected to be obtained per tablet.

5C. Match each highlighted section in the summary(A-F) to the correct function (1-6) from the list in exercise 5A. Page 9

- | | |
|--|---|
| 1. State the aims of your research | D |
| 2. Define what the problem is. | A |
| 3. Explain why your topic is worth researching. | C |
| 4. Say what the expected outcomes of the research are. | F |
| 5. Outline the procedure you will follow. | E |
| 6. Outline how you will limit your investigation. | B |

6A.

- 6 a Complete the project summary by another researcher below using the correct word or phrase from the box.

aims to however the initial phase the proposed research the study will indicate

Consumer interest in wines produced in organic vineyards has increased significantly in the last few years. (1) _____, to date it is unclear whether these production methods actually improve soil or grape quality. (2) _____ will be the first phase of a long-term study on a New Zealand vineyard. These results (3) _____ whether methods of viticulture improve grape quality.

The research (4) _____ investigate the effects of organic agriculture on soil and grape quality. (5) _____ will consist of two treatments, organic and conventional (the control), each replicated four times in a randomised, complete block design. All organic practices will follow the standards set out by the Food Standards Australia New Zealand (FSANZ).

(6) _____ will assess soil quality using physical, chemical and biological indicators over six years. The next phase will then assess the physiology of the vines.

1. However
2. The proposed research
3. Will indicate
4. Aims to
5. The study
6. The initial phase

PREPARING FOR AN INTERVIEW

Do exercises 13g and 15. Page 12 and 13 of your book.

13G. Complete the phrases in Exercise 13f with information that is true for you. Page 12

1. Hello. My name is Leylanie Mendoza Vázquez, and I am currently studying Chemical Technology.
2. My research focuses on chemical analyses in industrial processes.
3. This is useful because it gives me a great field of alternatives when looking for a job.
4. For example, the pharmacy area.
5. However, there are a number of problems with wages. Even though they pay pretty well compared to other countries here, they're not paying what they should.

15. Imagine you are being interviewed for a job or a fellowship. In pairs, make a list of questions which you might be asked. Then take turns to interview each other. Page 13

1. ¿ Why am I applying for this job or grant?
2. ¿ Why should I be given the position or scholarship I applied for?
3. ¿ What skills do I possess?
4. ¿ What are my long-term goals?
5. ¿ How can I help them and vice versa?
6. ¿ How do I like to work more, in a team or alone?
7. ¿ How would I describe myself in 3 words?
8. ¿ How much am I willing to offer the maximum?