



GOVERNO DO ESTADO DO RIO DE JANEIRO – UNIVERSIDADE ESTADUAL DO NORTE FLUMINENSE
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CENTRO DE CIÊNCIA E TECNOLOGIA – PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIAS NATURAIS
PROCESSO DE SELEÇÃO PARA PÓS-GRADUAÇÃO 2020/01

DOUTORADO

CÓDIGO	<i>GABARITO</i>
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From the article, answer the following 5 questions in either English or Portuguese. You may use an English-English dictionary only.

1. Please, translate the two last paragraphs into Portuguese (“But I suspect it’s also a product of the unfortunate reality...” and “For example, science communicators create crucial dialogue...”)
2. Based on the following statement: “To successfully implement these changes, we must first subvert the assumption on which PhD programmes seem to be built: that their participants plan to pursue academia. This mindset is in part a consequence of PhD programmes being crafted by professors who used their own career trajectory as a template”, please choose the correct option or options (there may be more than one).
 - a. By using their own career trajectories as standards, PhD professors tend to disregard other forms of career objectives which translate into distinct research and/or learning pathways.
 - b. The academia should not be the primary focus of a doctoral programme, and this is the central critique proposed herein.
 - c. The academia-driven assumption indicates a negative mindset for research and higher studies.
 - d. The author criticizes the commonsensical perception of PhD researchers and professors regarding the purpose of doctoral programs.
 - e. In case PhD programmes were not projected by professors, the current doctoral courses would have brought better results to society.
3. What is the article’s central debate?
4. Regarding the third, fourth and fifth paragraphs (from “Despite the lack of exclusive interest in academic careers...” until “...therefore ineffective incentive to put in the work.”), according to the author, what are the factors which indicate that PhD programmes are not designed for those who seek non-academic employment?
5. Please, explain the 7th and the 8th paragraphs by using your own words.

GABARITO DA PROVA DE DOUTORADO - PROFICIÊNCIA

1. Please, translate the two last paragraphs into Portuguese (“But I suspect it’s also a product of the unfortunate reality...” and “For example, science communicators create crucial dialogue...”)

Suspeito, porém, que isso também seja produto de uma realidade infeliz, onde orientadores de PhD simplesmente não percebiam carreiras nãoacadêmicas com o mesmo grau de admiração. É significativo o fato de que muitas pessoas têm escrito artigos sobre como dar notícias, aparentemente devastadoras ao seu orientador, de que você não está seguindo os mesmos passos. Se a academia não consegue apreciar o valor inerente das profissões para além de ‘professor pesquisador’, então talvez ela possa ao menos reconhecer os benefícios que se ganha ao ter cientistas doutores em funções fora da universidade.

Por exemplo, comunicadores científicos criam um diálogo crucial entre cientistas e o público, ajudando a estabelecer uma maior audiência para o trabalho do pesquisador, e evitando a má interpretação das descobertas. Aqueles no campo das políticas científicas ajudam a informar sobre importantes regulamentações que afetam agências nacionais de financiamento à pesquisa acadêmica. Professores de ciências do ensino médio, docentes e instrutores de laboratório estão treinando a próxima geração de estudantes de graduação que trabalharão nos laboratórios universitários. Com esperança, os programas de PhD à disposição destes alunos os ajudarão a sentir legitimados e preparados para o plano de carreira à sua escolha. (2,0 pontos, 1,0 por cada parágrafo)

2. Based on the following statement: “To successfully implement these changes, we must first subvert the assumption on which PhD programmes seem to be built: that their participants plan to pursue academia. This mindset is in part a consequence of PhD programmes being crafted by professors who used their own career trajectory as a template”, please choose the correct option or options (there may be more than one).
 - a. By using their own career trajectories as standards, PhD professors tend to disregard other forms of career objectives which translate into distinct research and/or learning pathways.
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 - e. In case PhD programmes were not projected by professors, the current doctoral courses would have brought better results to society.

RESPOSTAS CORRETAS: A; B; D. (2,0 pts para as 3 corretas; 1,4 para 2 corretas; 0,7 para 1 correta)

3. What is the article's central debate?

Resposta em Português:

Que a academia não deveria ser o único objetivo ao redor do qual os programas de doutorado são feitos. Há outros interesses profissionais de parte dos alunos que exigiriam uma reestruturação do programa como um todo, incluindo os requisitos para entrada e para outorga do título. (2,0 pts)

Resposta em Inglês:

The Academy should not be the only goal around which PhD's are built. There are other students' professional objectives which would require restructuring these programs entirely, including the requirements for admission and the Doctoral degree attainment.

4. Regarding the third, fourth and fifth paragraphs (from "Despite the lack of exclusive interest in academic careers..." until "...therefore ineffective incentive to put in the work."), according to the author, what are the factors which indicate that PhD programmes are not designed for those who seek non-academic employment?

Resposta em Português:

Os requerimentos exigidos para obtenção do título como o pré-projeto em um formato único para pesquisa acadêmica e a produtividade em questão de publicações, títulos e trabalhos apresentados. Os eventos sediados e apoiados pelos departamentos de ciências que, em sua finalidade acadêmica de iniciação ou comunicação científica, esquecem outros modos de fazer ciência como criação de produtos, modelos comunicativos para a intersubjetividade, informes de atuação, feiras de emprego e oportunidades industriais. Expertos em áreas correlatas como políticas públicas para investigação biológica e registro de propriedade intelectual têm outros requisitos para o melhoramento de suas habilidades além da busca de financiamento à pesquisa e à docência em incubadoras ou instituições voltadas ao desenvolvimento acadêmico. Também é necessário fomentar capacidades produtivas como inovação em produtos e soluções criativas para mercado de bens e serviços, estratégias de disseminar a ciência através dos meios de comunicação e das novas mídias digitais, articulação entre atores envolvidos no sistema de recursos à educação de ciências no Ensino Médio e no Terceiro Grau. (2,0 pts)

Resposta em Inglês:

The requirements for attaining the title would be the research project proposal formatted according to standards for the Academy and the productivity regarding article publications, titles and works presented. The events hosted and supported by the Science Departments which, aimed at academic scientific initiation, forget about other ways of science-making as product design, communicative models for inter-subjectivity, performance reports, job fairs and industrial opportunities. Experts in related fields as public policies for biological research and intellectual properties have other requirements in order to enhance their skills beyond the search for funding to research and professorship in incubators or other academy-oriented institutions. It is also necessary to promote productive capacities as innovation on products and creative solutions for goods and utilities market, strategies to propagate science throughout mass and the new digital media, articulation among actors involved in the science education resource-related system at secondary and tertiary instances.

5. Please, explain the 7th and the 8th paragraphs by using your own words.

Resposta em Português:

Assim como os projetos de pesquisa convencionais podem dar lugar a outros tipos de exercício intelectual a partir de outras atuações profissionais, os eventos promovidos pelos Departamentos de Ciências poderiam dar espaço a estes outros campos para além da docência e da pesquisa académicas. Desta forma outros objetivos profissionais dos alunos de doutorado seriam contemplados e igualmente legitimados nos esforços das coordenações e departamentos dos cursos universitários. (2,0 pts.)

Resposta em Inglês:

Just as conventional research projects may give room to other types of intellectual exercise out of other professional performances, the events promoted by the Science Departments could open up to these other fields beyond teaching and research. In this way, other Ph.D. students' professional goals would be encompassed and equally recognized in the efforts from the university coordination and departments.

Make science PhDs more than just a training path for academia

Science PhD programmes cater almost exclusively to students bound for academia, but they don't have to, says Sarah Anderson.

28 AUGUST 2019

My committee member looked up from the document in his hand, which detailed my ideas for my research proposal. He cleared his throat: "You know, when you apply for faculty positions..." he began. I gave a quick, impulsive nod in response, but thought to myself, "That's never going to happen."

I'm a PhD candidate in chemistry with no intention of pursuing a career in academia, and I'm certainly not alone: out of 81 students in my programme, only 40% plan to go into academia. A more comprehensive survey of 5,700 science doctoral students worldwide, conducted in 2017, found that 75% of respondents wanted to work in academia after graduation, although a significant portion of those reported equivalent interest in the industry sector, suggesting indecision¹. Clearly, the desire to pursue academia is not universal among PhD students. Furthermore, tenure-track job openings are a rare find: a study of job availability carried out in 2014 concluded that only 13% of PhD graduates can attain academic positions in the United States².

Despite the lack of exclusive interest in academic careers and the low demand for professors, PhD programmes are designed to accommodate students with their sights set on academia. This fact is evident in the requirements that PhD students must meet to earn their doctoral degree, as well as the events hosted and sponsored by science departments.

Research is of course at the heart of a PhD, and assessment of productivity through a qualifying exam and thesis defence is needed to bestow a doctorate. But the goal of an original research proposal, such as the one my committee member was holding, isn't to evaluate progress, but rather to serve as practice for developing exploratory project ideas and securing funding for them — skills most relevant to future professors.

This agenda isn't hidden: the reminder that a great proposal could be used later in faculty applications was dangled in front of my colleagues and me as a largely inapplicable and therefore ineffective incentive to put in the work.

There are typically more opportunities for non-academic professional development outside of a candidate's department of study, such as science-journalism and business-certification courses. But a lack of department promotion and sponsorship of these programmes means that students are often either unaware of their existence or feel discouraged from participating.

Research proposals are one example in which PhD programme requirements could be better tailored to the career goals of each individual student. Those interested in science communication shouldn't waste their time producing a proposal for research they're not interested in performing. They could instead write a piece on their research targeted at a non-expert audience, for example. Similarly, those planning to enter industry could pitch a new product, and those aiming to become lecturers could participate in and report on a teaching internship. Choosing a career track with corresponding requirements could become as standard as selecting an inorganic, organic, physical or biological chemistry track.

The events hosted and sponsored by science departments are an area in which graduate school could become more inclusive and beneficial to students pursuing careers beyond academia. There are many professionals in industry and non-conventional fields who could occupy some slots on the department calendar. Furthermore, by promoting external programmes aimed at non-academic-career preparation, science departments could ensure that students are aware of such opportunities and display public support for their participation.

To successfully implement these changes, we must first subvert the assumption on which PhD programmes seem to be built: that their participants plan to pursue academia. This mindset is in part a consequence of PhD programmes being crafted by professors who used their own career trajectory as a template.

But I suspect it's also a product of the unfortunate reality that PhD advisers simply do not view non-academic careers with the same degree of admiration. The fact that multiple people have written articles on how to break the apparently devastating news to your adviser that you aren't following in their footsteps speaks volumes. If academia can't appreciate the inherent value of professions beyond 'research professor', then maybe it can at least recognize the benefits it gains from having PhD-trained scientists in roles outside academia.

For example, science communicators create crucial dialogue between scientists and the public, helping to establish a wider audience for researchers' work and prevent misinterpretation of findings. Those in the field of science policy help to inform important regulations that affect national agencies funding academic research. High-school science teachers, lecturers and lab instructors are training the next generation of graduate students who will work in university labs. Hopefully, the PhD programmes that these students experience help them to feel validated in and prepared for whatever career path they choose.

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doi: 10.1038/d41586-019-02586-5

¹ Woolston, C. *Nature* **550**, 549-552 (2017).

² Larson, R. C., Ghaffarzadegan, N. & Xue, Y. *Syst. Res. Behav. Sci.* **31**, 745-750 (2014).