The role of creativity in graduate education according to students and professors

O papel da criatividade na pós-graduação segundo estudantes e professores

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Abstract

The aim of this research was to examine the role of creativity in the context of graduate studies from the perspective of students and professors. Semi-structured interviews were held with six students and six postgraduate professors from both a private and a public university. The topics covered included relevance, conception, and characteristics of creativity, as well as educational practices that foster and inhibit creativity. Grounded Theory was used to analyze the data. Both students and professors considered creativity as fundamental for the development of graduate education, but both have indicated personal and institutional barriers for the promotion of creative thinking. Partnerships, teamwork, different teaching strategies and interdisciplinarity were pointed out as factors that enhance creativity. On the other hand, the participants mentioned the evaluation of postgraduate programs, repetitive classes and bureaucracy as barriers to creativity. Future studies, involving classroom observation, case studies, and psychometric measurements, are suggested.

Keywords: Creativity; Education, graduate; Faculty; Students.

Resumo

Esta pesquisa teve como objetivo examinar o papel da criatividade no contexto da pós-graduação, sob a ótica de estudantes e professores. Foram conduzidas entrevistas semiestruturadas com seis discentes e seis docentes de pós-graduação de uma universidade particular e outra pública. Os tópicos abordados incluíam relevância, concepção e características da criatividade, bem como práticas favoráveis e inibidoras. Para análise dos dados, utilizou-se a Teoria Fundamentada nos Dados. Constatou-se que tanto alunos como professores consideram a criatividade fundamental para o desenvolvimento

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da pós-graduação, mas ambos pontuaram barreiras de ordem pessoal e institucional à promoção do pensamento criativo. Parcerias, trabalho em equipe, diferentes estratégias de ensino e interdisciplinaridade foram apontados como fatores promotores da criatividade. Por outro lado, avaliação de programas de pós-graduação, aulas repetitivas e burocracia foram barreiras à criatividade mencionadas pelos participantes. Sugere-se a realização de estudos futuros, envolvendo observação em sala de aula, estudo de casos e medidas psicométricas.

Palavras-chave: *Criatividade; Educação de pós-graduação; Docentes; Estudantes.*

In a complex contemporary scenario marked by crises, dilemmas, contradictions and rapid changes, the ability to create has turned into a key part of individuals and societies. For Csikszentmihalyi (2006), creativity is not a luxury, but a necessity in the contemporary world, as it helps the individual to respond in a productive and appropriate way to the challenges and difficulties faced in both his personal and professional lives. According to Kettler, Lamb, Willerson, and Mullet (2018), creativity benefits both education and economy, as well as it supports personal endeavors and social fulfillment. Corazza (2016) states that, in today's society, the mere possession of knowledge is no longer enough. It is necessary to transform knowledge to generate new ideas, concepts and artefacts.

A creative response demands unusual associations, insights, knowledge, personal characteristics, such as independence of thought, openness to new experiences, flexibility, persistence, imagination, among others, besides a psychological and social environment in which the original idea is stimulated, valued and acknowledged (Beghetto & Kaufman, 2017; Feist, Reiter-Palmon, & Kaufman, 2017). It is therefore not possible to understand creativity by focusing solely on individual or environmental aspects (Garcês, Pocinho, Jesus, & Viseu, 2016). The creative phenomenon is systemic and involves multiple personal, social, cultural and historical factors that combine in different ways (Csikszentmihalyi, 1999). For Cropley (2005), this is a two-way movement, the relationship between creativity and the social environment is reciprocal: the environment promotes creativity and directs innovative production, but creativity also changes the environment. The author also highlights the influence of society on the quantity and type of creativity that emerge in a given culture at a given moment.

For Csikszentmihalyi (1999), it is much more important to identify where creativity is than to define it. In his systemic view of creativity, this author presents the phenomenon as a process that results from the interaction among three factors: (a) domain, which involves a set of rules and procedures specific to an area of knowledge, transmitted and shared by society; (b) a person who, with his genetic baggage, experiences, personality traits and knowledge baggage, introduces variations in the domain, and (c) field, portrayed by specialists responsible for deciding if a new idea is creative and can be incorporated into the domain. For the emergence of a creative product, the individual should be encouraged to deepen his knowledge in a domain, to recognize in what situations an idea is considered creative by the field, and to analyze to what extent the environment in which the person is inserted is receptive to changes and encourages creative production.

In this sense, the school is seen as a privileged context of opportunities to be developed. As it is in this environment that individuals spend most of their lives, it makes sense that several authors emphasize the importance of the implementation of creative skills, in several knowledge domains, throughout the school trajectory (Alencar & Fleith, 2016; Alencar, Fleith, & Pereira, 2017; Cropley, 2016; Morais et al., 2017; Omdal & Graefe, 2017; Souza, Witter, & Araújo, 2014). In Brazil, according to Nakano and Wechsler (2007), most of the studies carried out have been conducted in the context of basic education, compared to the research carried out in the higher education context. Lima and Alencar (2014) also highlight that there are few studies about creativity conducted in higher education.

One of these investigations (Alencar & Fleith, 2008) involved interviews with 64 engineering students about factors that favored and inhibited personal creativity. Preparation, encouragement, intelligence

and self-confidence were the most outstanding facilitators of the expression of personal creativity. As for the obstacles, the students mentioned insecurity, fear of expressing themselves, lack of motivation and encouragement and the way teaching was being conducted in the course. In order to investigate the effects of an intervention on creativity in higher education, Fadel and Wechsler (2011) implemented an 11-session program involving college professors. At the end of the training, the participants perceived themselves as more creative and more likely to develop creativity in the classroom. In addition, their students evaluated them in a much more positive way in the post-test phase. The results highlight the importance of preparing professors to work in order to develop their creativity in the educational context.

In the context of postgraduate education, research on creativity is scarce, according to the results of a query in the SciELO, PePSIC and Capes Portal databases, using the descriptors of "creativity", "graduate studies", "doctorate", "graduate program", and their corresponding terms in Portuguese. One of them, led by Oliveira (2012), examined, from the perspective of 20 graduate students and 20 professors, conceptions of creativity and pedagogical procedures used by professors that furthered the development of students' creative potential. The results indicated that both professors and students found creativity important and considered postgraduate education as a way to break down boundaries, bringing the new and useful to society. The creativity conceptions presented were associated with innovation, breaking patterns, overcoming boundaries, problem solving and innovative products. Graduate students characterized the creative professor as one who adopts diversified practices, is bold, enthusiastic and flexible, and has a good relationship with the students. Both professors and students pointed out several procedures they considered favorable to the promotion of creativity in the educational context. Professors said that they rarely meet creative students who had not been trained on the subject of creativity. In addition, professors and students reported having little or no knowledge about creativity.

Lima and Alencar (2014) investigated pedagogical practices favoring the development of creativity and factors inhibiting its expression through interviews with 15 professors. The practices which were most mentioned by the interviewees were the ones to instigate the student through challenges and inquiries and to use films, literary works, staging, music, drawing, poetry, etc. The obstacles included gaps in student education, the fear students have of expressing themselves, bureaucracy of the educational institution, focus on production quantity by the regulatory entities of graduate education institutions, accommodation and the "conservative" training of professors.

The National Graduation Plan 2011-2020 (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior [Capes], 2010, p.193) recommends the creation of "a talent training agenda to support the innovation processes of the country's industrial park, observing future trends, in order to strengthen skills and competencies". For Botomé and Kubo (2002, p.100), the core of scientific work involves "working with the unknown and producing new knowledge, which often requires innovation and creativity in both work methods and techniques, research tools, forms of speaking or presenting the discoveries and the knowledge produced". Furthermore, Lovitts (2005) advocates the need for creative graduate education because society relies on innovative ideas to survive and move forward. According to this author, the goals of graduate education are to generate creative researchers and produce theses that offer original contributions to the areas of knowledge.

Nevertheless, there are plenty of obstacles to the development of creativity in the graduate context. Requirements such as average graduation time, intellectual autonomy, theoretical and methodological dominance and productivity are factors Kuenzer and Moraes (2005) listed as difficulties graduate students experience. Zanella (2004) calls attention to the working conditions of academic advisors, such as tight deadlines to conclude studies, diversified partnerships, production in journals of excellence, increased dedication to the program, among others, which also require a lot of creativity from the professor. In addition, professors who reproduce both in classrooms and in tutoring activities what they have learned or experienced

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may compromise the work of their students (Botomé & Kubo, 2002). In a literature review study conducted by Duhamel (2016), it was found that conservative teaching, inadequate time allocation for study, and devaluing creativity were barriers to creativity in nurse education programs. Brodin (2018) interviewed 14 dyads of students and supervisors from graduate programs regarding creativity in Swedish doctoral education. The results revealed that students' creativity was "encapsulated in silence" due to restriction by scholarly traditions, embodying the power of their supervisors, and unrequested in practice.

According to the National Graduation Plan (PNPG) 2011-2020 (Capes, 2010), between 2004 and 2009, there was an increase of 35.9% in master's and 34.4% in doctoral programs, thus expanding the number of graduate students. More recently, according to the Report of the PNPG's Special Monitoring Committee 2011-2020 (Capes, 2017), a 20.8% increase was projected in master's programs and 30.7% in doctoral programs by 2020, considering the levels of 2015. It is also estimated that, in 2019, the number of doctoral students is going to exceed that of master's students. In order to prepare creative researchers who will contribute to the production of new knowledge, it is imperative to evaluate professors' and students' perceptions regarding the importance of creativity, the relationship between creativity and scientific knowledge, and to what extent creativity has been enhanced or inhibited in graduate programs. Considering the Brazilian scenario in terms of the future of graduate studies and the relevance of creativity for knowledge production and training of new researchers, this study was developed to examine the role of creativity in the context of graduate studies from the perspective of students and professors.

Method

Participants

Six graduate students participated in this study, five of them being doctoral students and one being a master's student (three women and three men), and six professors (two women and four men) from one public and one private university from the Midwest, in three areas: Humanities, Exact Sciences and Life Sciences. The students' mean age was 34 years, ranging from 26 to 46, while the professors' mean age was 56 years, ranging from 39 to 62. The professors' average experience in graduate programs was 14 years (from 5 to 28 years). Among the students, two had undergraduate research experience and two participated in the *Programa de Educação Tutorial* (PET, Tutorial Education Program). At the public university, a student and a professor from each of the areas mentioned above were interviewed. At the private institution, as there were no graduate programs in the area of Exact Sciences, two students and two professors from Humanities and one student and one lecturer of Life Sciences were interviewed. Given the difficulty to randomly select the sample used in this study, as the subjects' participation in the project is voluntary, convenience samples were used.

Instruments

A semi-structured interview was used, whose script included questions related to the: conception of creativity; importance attributed to creativity in the social and professional context; importance attributed to creativity in the graduate context; the relation between creativity, teaching, learning and academic performance; characteristics of creative students and creative professors in the graduate course; the role of the graduate professor in the development of students' creativity; teaching practices that favor the expression of creativity in master's and doctoral courses; the assessment by the professor of his or her own role as a professor and the extent to which it stimulates the creativity of their students; and the students' assessment

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regarding the extent to which their professors favor the promotion of creativity in graduate education. The average interview with the students lasted 25 minutes and 38 minutes with the professors. The interviews were conducted individually, recorded and later transcribed.

Procedures

After approval of the project by the research ethics committee from a public university, contact was made via electronic mail with the professors to explain the study and schedule the interview. At the end of each interview, each professor was asked to indicate graduate students to participate in the research. Then, the students were contacted and the interview was scheduled, both by e-mail. Prior to the start of the interview, participants were given an Informed Consent Form, as well as a Voice Consent Form for Research purposes. The author of this article conducted the interviews.

Data Analysis

The Grounded Theory (Strauss & Corbin, 2008) was used to analyze the interviews. After detailed reading of the transcribed interviews, units of meaning were assigned to the collected data, seeking to identify recurring themes, ideas or language. These units were grouped and categories were generated. The analysis was completed with the relation established between the categories produced.

Results

Data from the interviews were organized into categories, which served as an axis for the analysis of the interviewees' discourse. Regarding the first category, called Importance of Creativity, all interviewees acknowledged the relevance of creativity, whether in the academic sphere, in scientific production or even in the everyday life. Nevertheless, while professors emphasized the importance of creativity for advancing the scientific practice, students emphasized its relevance for daily problem-solving and for the progress of society, as mentioned by Student 1: "I believe that creativity is important even beyond these environments (professional and academic). We need creativity in all circumstances of life, not just these two, in relationships, in dealing with the adversities of life". For Professor 4:

> Creativity is essential from the perspective of scientific practice, which is the main goal of graduate education. I would say it's impossible for you to be in a graduate school and meet what you expect from graduate education ... without being creative.

Four professors drew attention to the relevance of creativity as a result of the current moment in our society. According to Professor 2, *"we are experiencing a moment of crisis ... political, ... economic, ... social, ... of values, of relationships. ... At the center of the world today are religious issues and everything about them"* and, precisely, *"at times of crisis, creativity is fundamental"*. Other professors emphasized creativity as a fundamental tool to monitor technological development, to be used both research and classroom contexts: *"Particularly in the area of technology, there are technological advances at all times so, if you are not updated in this context, things do not get very easy"* (Professor 5). The students did not mention this aspect. Another point mentioned by the professors was creativity as an indicator of health. For Professor 3, creativity *"is an indicator of the dimension of quality of life"*, *"is a health indicator of individuals"* and *"is institutional health"*. Professor 2 also linked her way of being creative with health: *"I would get sick, I cannot manage to teach the same discipline twice in the same way, I cannot manage to keep on doing the same thing in the same*

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way". In the student group, on the other hand, the emphasis was on the role of creativity for sustainability and group work. Student 4, for example, stated:

> One thing that is very much in the pipeline today is this question of innovation, of being able to create things in a sustainable way, taking into consideration the environment ... so if you have several creative individuals within a group, they can contribute collectively.

Asked about the Definition of Creativity, the second category generated, the participants were unanimous in affirming that it is linked to new ways of solving problems. All students and professors mentioned concepts such as innovation, creation and originality. It was observed that the participants found it difficult to define the concept objectively. Student 5, for example, proceeded with the theme of creativity as:

> The ability you have to cope with the situations that life offers you, whether in an infinity of ways, in a classroom or on a day when you have forgotten all your material at home and when you are responsible for doing something different and that you think you will manage it, I think this is important.

In defining creativity, the professors drew attention to the motivational factor and the relevance of structural factors to understand the phenomenon. According to them, it was not enough to focus solely on the creative individual. Professor 1 stated that he *"highly appreciates situational variables"* and is *"frustrated by these approaches that focus only on characteristics"*.

In expressing the relationship between teaching, learning and creativity, another category expressed in the interviewees' report, all participants unanimously said that, in an ideal context, there should be a much stronger relation between these aspects than what is observed: *"I think it's what should always exist, but it almost always does not"* (Student 6). Creativity was generally viewed as an essential aspect in the graduate context, but the professors were ambivalent about whether or not creativity is stimulated. As Professor 1 points out: *"I can put together the research project I want ... I think there is room for creativity, but for creativity to be it has to be published, therefore, I think the filter is too large"*. Students attributed the central role in promoting creative teaching and learning more to the professor than to the student. "*Depending on the subject, I already had experience in that, the extent to which this (creativity) was stimulated varied a lot ... it depends a lot on the professor"* (Student 3). Another student also said she notices that *"the professor cannot continue in the archaic model of teaching standards. He needs to have new ideas to better engage students and needs to be creative to propose new tasks"* (Student 2). Overall, professors affirmed that creative teaching favors the student's learning but, according to Professor 4, *"creativity will not always entail ... academic success or academic advancement"*.

In expressing Creativity Fostering Strategies and Factors, another category that emerged in this study, the professors argued that the profile of creative classes is characterized by an informal environment, by challenging and non-repetitive classes, and by a range of student education areas. In this aspect there was not much difference between the points students and professors raised. Both groups recurrently mentioned factors such as interdisciplinarity, establishment of links between academic content and daily life, practical work, invitations to experts in the students' areas of interest, students' active engagement in the classes, group planning and organization, group discussion of articles, use of technological resources, different teaching strategies and the use of humor. The students also emphasized the importance of professor support and partnership. The professors specifically mentioned other factors that foster creativity in graduate studies, such as access to financial and material resources, a team of master's and doctoral students assistants, a network of partnerships established among researchers, and a flexible curriculum.

One of the most frequent themes in the interviews was Barriers to Creativity. In general, participants mentioned ideal scenarios, but they also noted many obstacles to achieve creative thinking and practice. With regard to the more bureaucratic part of the research, some students criticized the way in which funding agencies conduct the production of knowledge. According to Student 1, this model generates immobility:

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"it seems that institutions, in favor of what agencies order or outline, they do not accept new proposals ... I believe that everything is so closed, the projects that are approved, the resources that are distributed". He adds that all adjustments have to be made in order to make research projects "*as close as possible to what is already operating, managed. It seems like it's always this same curtailment*". The professors also referred to difficulties such as the hiring model of professors; the evaluation system of graduate programs; publishing model in specialized magazines; bureaucracy to carry out projects; differences between generations, generating a gap between students and professors; lack of communication between them and among the general sectors of the university; and lack of resources. Most students referred to the standard model of graduate classes as being very repetitive, not instigating the students' creativity. Other criticism related to the great load of material that has no relevance for the research theme that is developed, and lack of articulation between theory and practice. On the other hand, the professors signaled a profile of students and professors characterized by passivity, insecurity and extrinsic motivation as limitations to creativity. In addition, graduate students were seen as less creative than undergraduates due to the limited time available and excessive concern.

As for the Creative Professor and Student Profile category, the characteristics students and professors mentioned were motivation, questioning, and curiosity. According to Professor 4:

> *If you do not vibrate, you are unable to be creative in what you do. You cannot be creative giving classes if you do not vibrate with it. You cannot be creative in science if you do not get excited about a new article.*

Regarding the profile of creative professors, both groups agreed that they are motivating, take interest in several areas of knowledge, know how to navigate through them in a profitable way, and are available beyond the classroom to attend and help students. According to Professor 6, "*In fact, we do not want to transmit anything anymore, we want to bring interest to things*"; and Student 4, "*The issue of information exchange, of you being open to listening to people from areas other than your own, even having contact with professors from other areas*". The students emphasized personal characteristics more, arguing that the professor would have to be bold, promote challenges, provide independence for students, and be humorous. They also stated that a creative professor should know how to transmit knowledge in different ways, and not be restricted to specific methods. The professors emphasized career issues, such as their experience in the area, the quest for training and innovative production.

Regarding the profile of creative students, both students and professors described it mostly based on personal characteristics. Thus, the professors described this profile as questioning, studious, autonomous/ participatory, resilient, curious, motivated and able to integrate distinct areas of knowledge and elements of everyday life with the academic. For the students, this profile represents a person who is autonomous, humorous, resistant to frustrations, persistent and able to transit through different areas of knowledge. Examples of reports: "*Overall, the students I consider creative do not follow just the baseline protocol. They think about the problem, go for it, expand their range*" (Student 2); "*You're going to be trying things that no one has tried yet, so the chance of error is pretty high. One must be resistant to frustration to deal well with it*" (Student 3). According to the Professor 2:

> *They end up promoting a lot of motivation in the class. Creative students make a difference in the class. They end up as multipliers of this creativity, because the moment they participate, others are also motivated to ask questions that are challenging, creative. They also tend to associate the different knowledge even from different areas.*

Data from the interviews also signaled the category creative processes. For Professor 3 every human being has potential for creativity but, for this creativity to be expressed, several individual and social factors are necessary. Some points in common came up in both students' and professors' statements. They realize the need for a background to establish creative production. For Professor 6, for example, while knowledge and creativity may be dissociated, creative development in some areas requires a specific background. Another

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point the participants mentioned was that creativity emerges from the need to solve problems. For Professor 2, the individual *"at times of crisis... needs to be creative enough to bring answers"*, this *"means that the traditional answers are no longer effective"*, which means that *"a way out is needed through a new thing, something new"*. In this attempt to find a new solution, some professors point out that the probability of errors is higher, so some individuals prefer not to take a chance. In addition, a new production will go through an evaluation filter and it will be necessary to make it reverberate but, as Professor 2 points out, sometimes a creative solution appears, *"but is unable to make itself heard"*, *"it can face resistance"*. According to Professor 3, *"if in the past certain expressions were not considered appropriate, or socially accepted, social changes are presenting new possibilities of expression"*. One aspect the professors particularly highlighted was the relationship between the generations. For Professor 5, youngsters who are entering graduate school come from another culture and, as Professor 3 explains, *"young people socially assume a general character of subversion. It is that search for the different, the new. ... Youngsters in graduate school yearn for that"*.

Discussion

From the results obtained, we can see that both students and professors attach great importance to creativity in the graduate context, although practices that stimulate creative thinking are not always applied. The results corroborate those found by Oliveira (2012), which indicated that both professors and students attributed importance to creativity and considered graduate education as a way of breaking borders, bringing the new and useful to society. The presented conceptions of creativity were associated with innovation, breaking standards, overcoming boundaries, problem solving, and innovative products. Overall, both students' and professors' responses to the concept and importance of creativity have been aligned with the literature in the area, which defines a creative response as something new, efficient, appropriate and relevant to the context, and considers the creative phenomenon as associated with multiple, combined, factors of a personal, social, cultural and historical nature (Alencar et al., 2017; Csikszentmihalyi, 1999; Omdal & Graefe, 2017). Many participants have stated that creativity cannot be understood by focusing solely on individual aspects, but the environment also needs to be considered.

Regarding the sex, type of institution and area studied, it seems that there were no discrepancies in the perceptions of students and professors. However, the design of the study does not allow us to draw conclusions about this. As for the differences in the opinions of students and professors, although many aspects were emphasized as common points, the students focused more on the professors' lack of incentive to creativity, while hardly ever or never focusing on the influence students could have in this process. On the other hand, even though the professors assumed their teaching practices as hardly creative, they mentioned the graduate student's current profile – accommodated, passive and disinterested. These results are also supported by literature, regarding the profile of creative professors and students as well as with regard to the barriers to creative practices in graduate studies. In the study by Jaskyte, Taylor, and Smariga (2009) on the perception of students and university professors regarding innovative teaching, the results indicated that, although professors and students attributed similar characteristics to innovative teaching, the latter considered professor personality, professor-student interactions, and classroom culture as the most relevant aspects. In Oliveira's research (2012), the graduate students characterized a creative professor as one who adopts diversified practices, is bold, enthusiastic and flexible, and has a good relationship with the students. Professors said that they rarely meet creative students and that they had not been trained on the subject of creativity.

Kuenzer and Moraes (2005) list requirements such as average graduation time, intellectual autonomy, theoretical and methodological mastery and productivity as difficulties graduate students experience. Zanella (2004) calls attention to the working conditions of the advisor, such as deadlines, diversified partnerships,

production in journals of excellence, among others, which also require a lot of creativity from the professor. On the other hand, both students and professors mentioned the quantitative demands of public entities for production as limiting creativity in graduate studies, a result also found by Lima and Alencar (2014) as an inhibiting factor of creative expression. It is concluded that investing in conditions that foster graduate creativity means drawing a flexible and interdisciplinary curriculum; encouraging inter-institutional exchanges in Brazil and abroad; encouraging flexible thinking in the classroom, avoiding dogmatic positions; and promoting a culture of recognition and valuation of creativity. As mentioned by Brodin (2018), believing in doctoral students' creative abilities and empowering them to fulfill their potential can be the next ruling academic agenda. "Then their scholarly creativity will find a voice, breaking through the silence in doctoral education" (Brodin, 2018, p.670).

As limitations of the present study, difficulty to generalize the results and the smaller number of participants in the area of Exact Sciences can be highlighted. Another limitation is the fact that the professors have indicated the students to be interviewed, which could have been a biased indication, instead of having selected a random sample. Further qualitative studies could be developed, involving both classroom observation and case studies, including professors and students considered by their peers as highly creative, as well as intervention research, monitoring and advising professors regarding practices that foster creativity in graduate education, which could offer more elements to understand the phenomenon of creativity in graduate education. In addition, future studies could compare creative thinking abilities, using a psychometric instrument, considering the sex, areas of knowledge, types of institution, and years of experience as a professor in graduate programs.

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