



The prescribed work and the actual work within the scope of scientific initiation guidance

Geyce Martins de Alencar Sousa, geyce.alencar@gmail.com, UFSCAR, São Paulo, SP, Brasil

Luiz Antônio Tonin, tonin@dep.ufscar.br, UFSCAR, São Paulo, SP, Brasil

SUMMARY

This study, in the exploratory phase, addresses the gaps between real work and that prescribed within the scope of undergraduate guidance, for the training of young researchers through the scientific initiation program. A case study was undertaken in a public higher education institution (HEI), located in the Brazilian center-west, with the application of questionnaires, interviews, document analysis, through which aspects relating to the procedures adopted by the advisors, their perceptions regarding established norms and their motivations for carrying out this assignment. The results indicated that the scarcity of financial and material resources to carry out research projects and the unavailability of the supervisee to carry out some previously agreed tasks are the main causes of overload in the guidance process. Furthermore, they indicated that advisors understand their responsibilities, adopt coherent procedures and are aligned with established prescriptions. As a motivational factor, the contribution to the academic and scientific training of students stood out.

Keywords: ergonomics; task; activity; strategies.

1. Introduction

The role of the advisor is that of an educator, whose more mature experience is shared with the student, in a joint process of knowledge construction (Severino, 2009, p. 21). This understanding is in line with that suggested by Silva and Vieira (2014), who suggest that guidance requires the researcher to be competent and imbued with knowledge and research practices that make it effective, acting as a guide for acquiring knowledge, as well as for the personal and intellectual development of the mentor. Guidance work presents itself as a complex task, which permeates academic, professional and personal aspects.

In this context, the following questions emerge: what would be the teachers' motivations for carrying out this task and acting as advisors in scientific initiation? What are the challenges faced? What are the weaknesses? And what strategies can be adopted to improve the guidance process?

The guidance makes up the list of possible activities for higher education professors and the details of the activities, at least in their general aspects, are normally provided for in institutional regulations. However, it is impossible to understand the work, in all its complexity, just from the formal description of a task.

For Daniellou (2021), there is an abyss between what should be done and how it is done, since they are two very different universes. This difference between what is prescribed and what is actually performed is one of the main points of discussion in the ergonomics of the activity.

Ergonomics plays a fundamental role in leading this reflection, having as its essence observations and analyzes of real work situations. Based on this recognition, it seeks to propose strategies that improve efficiency, quality, safety and, thus, help workers to recognize themselves and be proud of their work.

To reflect on these aspects and on how the diversity of interpretation of the prescribed work combined with human subjectivity can influence the work of orientation in scientific initiation, the objective of this study was to analyze how the real work of advising students linked to the Program of Scientific Initiation in relation to what is prescribed, based on the Ergonomic Work Analysis (AET), using the case of a public higher education institution (HEI) located in the Brazilian center-west, with a focus on proposing improvements that influence positively in their real work situations.

2. Development and theoretical framework

The Scientific Initiation Scholarship Program (PIBIC) is an instrument used by the National Council for Technological Development (CNPq) and other research support institutions to grant scholarships to encourage the academic, scientific and professional training of students. The action goes beyond the concern with the student's permanence at the University, and is mainly focused on aspects that guarantee the insertion of students in research, to improve their career, as well as, stimulate and contribute to the advancement and promotion of institutionalized research in the University education.

From the point of view of student training, Massi and Queiroz (2015) highlight participation in scientific initiation as a differentiator in the students' professional trajectory, since students develop cognitive aspects that favor their academic performance and in the job market.

Cabrero (2007), when investigating the impact of PIBIC on the training process of researchers at the Federal University of São Carlos, highlighted:

“Greater engagement of teachers with scientific research, encouragement to increase the teaching staff's qualifications, the formation of students' critical capacity and scientific mentality, the training of skills to express themselves in public and the ability to write, proven in the dissemination of articles and magazines and Congresses” (p. 214).

Studies that deal with the subject (CABRERO, 2007; MASSI & QUEIROZ, 2015; BRAATZ et al., 2021), reaffirm the positive results of the Program in terms of student training and institutional collaboration to increase researchers' engagement and to increase scientific production. However, there is a knowledge gap to be filled with regard to the real work of mentoring young researchers, through scientific initiation, as most reflections and publications are about the postgraduate guidance process.

Dias et al. (2021), when evaluating the historical process of work organization, found that it is the engagement of workers, with their informal experience and practical intelligence, that guarantees the execution of activities, since the prescribed operational procedures are often insufficient to ensure the production. In line with this same sense, Rocha and Vilela (2021) state that organizations comprise two dimensions, that of what is prescribed (tasks, regulations, flows, among others) and another dimension related to interactions, or the social activity of agents, with various adaptations and exceptions in relation to what is formalized.

At this juncture, knowing the dimension and understanding the adaptations that are necessary in a work environment to carry out an activity is essential to promote articulation between these two worlds and for the living organization to be part of its formal and prescribed structure.

Ergonomic Work Analysis can be understood as a set of methods and techniques that seek to understand and transform work situations, through the study of the activity in a real situation and through the systematic participation of the operator.

Therefore, this study, in its exploratory phase, proposes the analysis of the real work of guidance in scientific initiation in order to contribute, through the production of knowledge,

to the prescription of future work and to the improvement of management and monitoring processes.

3. Method

From November 2022 to April 2023, a descriptive study was undertaken, with a qualitative approach, considering the dynamics between the real world and the subject, aiming to analyze, from the perspective of the ergonomics of the activity, the work of undergraduate guidance, to train young researchers through the scientific initiation program.

Narrative and documentary theoretical research was used, as well as a case study carried out in a public HEI located in the central-western region of Brazil.

For Bressan (2004, p. 09), through the case study it is possible to obtain evidence from six data sources: documents, archival records, interviews, direct observation, participant observation and physical artifacts. Furthermore, according to Yin (2001, p. 27), it can be applied to evaluate contemporary events, where it is possible to make direct observations and systematic interviews, but without intervening in behaviors.

In this sense, for data collection, in addition to document analysis, a questionnaire (survey) was used, applied through an electronic Google form, complemented with face-to-face interviews.

The questionnaire consisted of 22 questions, 19 multiple-choice questions distributed across the following themes: procedures adopted by supervisors in the face of prescribed tasks (13 questions), perception of their responsibilities (6 questions), and 3 essays, which related to: motivation, difficulties faced and strategies to overcome the problems faced.

14 professors from the institution's permanent staff responded to the questionnaire, 2 of which also participated in the interview stage, in which they detailed their positions regarding the topics covered in the questionnaire.

4. Results

From the documentary analysis of institutional norms, it was identified that the regulation for participation in scientific initiation occurs through institutional selection instruments (announcements/internal calls), which define the procedures, norms and criteria for both registration and selection, monitoring and presentation of results.

Of the 14 teachers who responded to this research questionnaire, 79% were male and 21% were female. They all have doctorate degrees and work as teachers at the institution, in addition to developing research activities linked to the eight major areas of knowledge. Regarding the procedures adopted by advisors within the scope of scientific initiation, the results indicate that the majority of advisors understand and seek to put into practice the guidelines prescribed in institutional normative instruments, according to the answers to questions 1 to 4 (Table 1).

Table 1 - Results regarding the procedures adopted by respondents within the scope of scientific initiation guidance work (C: I agree; CT: I totally agree; NOF: I have no opinion on the subject; DT: I totally disagree; D: I disagree; FA: frequency absolute).

Affirmative	CT		C		NOF		D		DT	
	FA	%	FA	%	FA	%	FA	%	FA	%
1-a. The research projects I coordinate are registered with a focus on participation.	4	29%	5	36%	0	0%	5	36%	0	0%
1-b. The research projects I coordinate normally include only 1 (one) scientific initiation work plan.	0	0%	1	7%	0	0%	8	57%	5	36%
1-c. The research projects I coordinate normally encompass several scientific initiation work plans.	8	57%	5	36%	0	0%	1	7%	0	0%
2-a. Before registering students, I read the Notice/Internal Call for selection to find out and update myself on the rules.	10	71%	4	29%	0	0%	0	0%	0	0%
2-b. Before registering students, I strongly recommend that my supervised candidates read the Notice/Internal Call for selection to learn about and update themselves on current regulations.	12	86%	1	7%	0	0%	1	7%	0	0%
2-c. I follow the entire process of preparing and writing the work plan that will be used to enroll in the selection process and subsequently developed during the 12 months of the scholarship.	9	64%	5	36%	0	0%	0	0%	0	0%
3-a. I encourage the candidate student to prepare and write the work plan for the 12 months of the scholarship and, before registering, I only make small corrections and adjustments, when necessary.	6	43%	4	29%	1	7%	3	21%	0	0%
3-b. I prepare and write the work plan that will be used to enroll in the selection process and subsequently developed by the student during the 12 months of the scholarship.	0	0%	2	14%	0	0%	8	57%	4	29%
4-a. I request the presentation of results monthly to involve students and avoid problems and delays when presenting PIBIC reports.	4	29%	6	43%	1	7%	2	14%	1	7%

4-b. I read all documents (work plans, reports, summaries, etc.) that are prepared by my students before submitting them for analysis by the Institutional Assessment Committee.	9	64%	5	36%	0	0%	0	0%	0	0%
4-c. The reports (partial and final) are prepared by the fellows.	10	71%	4	29%	0	0%	0	0%	0	0%
4-d. The reports (partial and final) are prepared by the supervisor.	0	0%	0	0%	0	0%	6	43%	8	57%
4-e. I accompany the scholarship holders in their face-to-face presentations during the Scientific Initiation Seminar.	7	50%	5	36%	0	0%	2	14%	0	0%

Source: Authors, 2023.

When it comes to institutional registration of research projects (questions 1-a, 1-b and 1-c), for 64% of respondents, research projects are registered with a focus on participation in the scientific initiation program. For the vast majority, 93%, the research projects they coordinate encompass more than one work plan.

Regarding the effort to become aware of the Program's rules in advance, assessed through statements 2-a and 2-b, all respondents state that they read the selection notice and 93% of them stated that they ask their students to do the same to know and update themselves on the regulations in force at the institution.

Regarding the preparation of the work plan to participate in the selection process, all respondents stated that they follow the entire process of preparing and writing the work plan. However, there is no unanimity regarding the procedure for preparing the plan. While 71% of respondents stated that they encourage the student candidate to prepare and write the work plan, a portion of them, corresponding to 14%, stated that they prepare the student's work plan.

When asked about the presentation of the results obtained by the student, all respondents stated that the reports are prepared by the scholarship holders and not by the supervisors. And, the majority (86%) stated that they attend face-to-face presentations by students at the Scientific Initiation Seminar.

When it comes to the perception of the supervisor's responsibilities, the responses showed that the majority understand that they have responsibility for monitoring deadlines and that, despite being responsible for guiding students, they recognize the importance of institutional monitoring of the work carried out (Table 2) .

Table 2 - Results regarding the perception of the advisor's responsibilities (C: I agree; CT: I totally agree; NOF: I have no opinion on the subject; DT: I totally disagree; D: I disagree; FA: absolute frequency.).

Affirmative	CT		C		NOF		D		DT	
	FA	%	FA	%	FA	%	FA	%	FA	%
5-a. I feel responsible for following the deadlines for presenting results (reports and seminar).	9	64%	3	21%	0	0%	2	14%	0	0%
5b. I believe that the responsibility for following the deadlines for presenting results (reports and seminar) lies with the scholarship holder.	2	14%	6	43%	0	0%	4	29%	2	14%
6-a. I believe that it is important to request an institutional partial report as part of the monitoring process.	7	50%	4	29%	0	0%	2	14%	1	7%
6-b. I believe that the institutional request for a final report is important as part of the evaluation process.	11	79%	3	21%	0	0%	0	0%	0	0%
6-c. I believe that the oral presentation of the work in the Scientific Initiation Seminar is important as part of the evaluation process.	13	93%	1	7%	0	0%	0	0%	0	0%
7-a. I believe that reports should only be presented to supervisors, without the need for submission to the Institutional Assessment Committee.	0	0%	1	7%	0	0%	3	21%	10	71%

Source: Authors, 2023.

Regarding the monitoring of delivery deadlines for results presentation artifacts, based on the positions presented in relation to the statements that deal with the responsibility of the supervisor (5-a) and the scholarship holders (5-b), it was possible to verify that 43% of the respondents believe that this is a responsibility shared between fellows and advisors. The same percentage was observed among those who understand that this is the supervisor's responsibility. The majority of respondents (85%) understand that they have responsibility for this topic. In contrast, for two of the respondents, this responsibility is exclusive to the scholarship holder.

The research participants considered the importance of preparing the partial report (6-a), the final report (6-b) and the oral presentation of the research results in the Scientific Initiation Seminar (6-c) for the evaluation process of the scholarship holder. In this context, all respondents expressed their support for the relevance of the final report and the oral presentation at the Seminar. However, when it comes to the partial report, there is no unanimity, as 21% disagree that it is important for the institution to request this instrument as part of the grantee monitoring process.

Still on the importance of institutional evaluation, participants answered whether they believed that reports should only be evaluated by supervisors or whether they should really be submitted to an Institutional Evaluation Committee (7-a). In this regard, the majority of respondents (93%) recognize the importance of the evaluation of reports prepared by students,

which is carried out by the Institutional Committee. But, for one of them, the assessment could be carried out by the supervisor himself, because, according to him:

“Sometimes reports may not be evaluated by people in the same line of research and this limits possible contributions” (Professor “A”, 2023).

The research participants discussed what motivates them to guide students in the scientific initiation program (Table 3). There were recurring statements that contributing to the training of students, as well as preparing the student for postgraduate studies, are the factors that motivate them to participate as advisors in scientific initiation. Furthermore, some of them highlighted the importance of student participation in supporting the execution of project activities.

Table 3 - Summary of the responses presented by participants about what motivates them to participate as advisors in scientific initiation.

Identification	8. Motivation to participate as a supervisor in scientific initiation
A	Train and insert students into research projects.
B	Stimulate learning in science among undergraduate students and stimulate learning in supervision among postgraduate students.
C	Strengthen the initial training of students as well as research groups and projects.
D	Train new researchers from graduation. Furthermore, graduates who undertake scientific initiation generally arrive more prepared for their master's degree.
E	Enjoying teaching and the possibility of doing this more closely through scientific initiation. Opening the paths of curiosity and creativity are my inspirations.
F	Allowing undergraduate students to have contact with my area of research, in addition, students are a great support in carrying out projects.
G	Provide scientific training for students.
H	Collaborate in the training of researchers, scientific production, promotion of postgraduate studies.
I	Stimulate the qualification of the teaching-learning environment in undergraduate courses and obtain support in the execution of research projects.
J	Research, knowledge and contribution.
K	Train future researchers in the area of knowledge in which I work.
L	Introduce students to understanding the importance of science. Furthermore, it helps to select potential candidates for the master's degree.
M	Training students is extremely important for the development of skills (such as creativity, critical thinking, autonomy, improvement of scientific writing, meeting goals and deadlines, ability to work in a team, among others) that will be of great value to the student. exercise of the profession, especially those who will pursue a career in academic research and/or future postgraduate studies.
N	Train human resources.

Source: Authors, 2023.

Participant “A” highlighted, in an interview, that it is gratifying to know when the student decides to continue their academic career:

“My motivation is to see that my students are learning and enjoying what they are doing. Well, learning and enjoying what you do go hand in hand. So, when the mentee learns, he enjoys what he is doing. One of the things that really motivates me is knowing that the student has pursued an academic career, as it shows that we played an important

role in helping them enjoy and learn. So, when he gets a master's degree it's very rewarding. And I can say that most of my students followed this path to graduate school. Furthermore, I had a student who is now a university professor. This is a source of great pride. It is this pleasure and recognition that motivates, in addition, of course, to the learning that comes with guidance" (Participant "A", 2023).

For participant "D", the workload accounted for the activity of advising undergraduate and scientific initiation students does not seem to be a determining factor in motivating teachers to perform this role:

"It is common for the workload that can be counted to be reached only with postgraduate students. Therefore, it is likely that a postgraduate advisor will not feel motivated to advise scientific initiation" (Professor "D", 2023).

Both interviewees (Teachers "A" and "B") highlighted that acting in scientific initiation guidance is more related to the satisfaction of being able to enrich students' training, through their inclusion in research activities, and, in this way, prepare them for postgraduate studies, rather than necessarily publishing the guidance in their teaching workload or publishing in high-impact journals at the end of the grant cycle, since they consider the 12-month time span to be short to this purpose. However, they highlighted that when student participation extends over more than one cycle, these expectations and possibilities tend to be expanded and eventually realized.

Asked about what usually negatively affects the guidance process and the strategies they usually adopt or which strategies could be adopted to resolve the difficulties faced, participants highlighted similar difficulties, but pointed out different strategies to overcome them (Table 4).

In their answers to questions about factors that tend to negatively affect the guidance process, respondents related the problems faced to factors such as: lack of financial and material resources to carry out experiments foreseen in the work plan; lack of resources for purchasing and maintaining equipment; problems in carrying out an on-site study; difficulty in making the undergraduate course workload compatible with the workload required for research development; and lack of time and commitment from students. The lack of financial resources and the lack of time and commitment from students are the most recurring allegations.

Regarding strategies to resolve the difficulties faced, participants highlighted: holding frequent meetings; establishing a schedule with clear deadlines and goals; adequacy of proposed methods; use of equipment in partnerships and acceptance of donations of inputs to carry out experiments. One of them mentioned the need to change the institutional rule to extend the

period for replacing fellows in the same work plan. And, two others mentioned factors that involve the granting of the scholarship: one mentioned that it conditions the maintenance of students as scholarship holders to the presentation of reports on time and another, which highlighted as a difficulty “the lack of commitment of the students” mentioned believing that granting the scholarship was a strategy to reverse this situation.

Table 4 - Summary of the responses presented by participants about the factors that tend to negatively affect the scientific initiation orientation process and the strategies that they usually adopt or that could be adopted to resolve them.

Identification	9. What usually goes wrong or gets out of control (expectation).	10. Strategies adopted or that could be used to resolve such difficulties.
A	Lack of financial resources; Difficulty maintaining equipment; and Personal problems of students.	Holding meetings to identify student needs and set deadlines according to difficulties.
B	High course load for students; Difficulty in making schedules for field activities compatible.	Carrying out work stages on Saturdays and encouraging interaction with postgraduate students.
C	Lack of financial resources for field activities; Difficulty accessing the researched institutions, due to restrictions against COVID-19.	Change in research methods.
D	Low adherence of students to deadlines defined by the advisor and/or the institution.	Conducting face-to-face and feedback meetings and explaining the advisor's expectations.
E	Lack of financial resources; Student withdrawal.	Encouraging activities to be carried out collaboratively among students and accepting donations of inputs for experiments.
F	Lack of financial resources; Student prioritization of other activities to the detriment of research; Student's family difficulties; and Student lack of interest in the line of research.	Carrying out activities not performed. Provision of a preliminary internship in the laboratory for the student to learn about the line of research, before proposing a work plan.
G	Lack of student time.	Demand for compliance with the schedule.
H	Delays in delivering reports limit the time for correction and consequently compromise the quality of the research.	Continuity of participation is conditional on the presentation of reports (partial and final), as scholarship holders' biggest concern is losing the scholarship or having to return it.
I	Lack of commitment to deadlines on the part of students; Engagement of students in parallel projects without the advisor's consent; and low student dedication and	Establishment of deadlines, which may result in dismissals or opinions that reflect the fragility of the research carried out, including the non-recommendation of granting certification.

	performance to their plan and prospecting for research material.	
J	Lack of financial resources; Lack of student commitment.	Constant alignment with the student, setting goals and adjusting the schedule.
K	Excessive commitments on the part of supervisors; Excessive student commitments.	Integration of guidance with undergraduate work to achieve objectives.
L	There are rarely any problems in this process.	Proposal to change the institutional rule to extend the period subject to replacement of students.
M	Lack of financial resources;	Use of equipment in partnership with other researchers within the university or in other research institutions in which we collaborate.
N	Difficulty maintaining equipment.	The scholarship is the motivation.

Source: Authors, 2023.

Respondents mentioned making adjustments to the method proposed in the work plan to adapt it to necessary changes when a reagent or other type of material is missing, or even when equipment becomes unavailable; seek sponsorship and donations from the private sector to purchase materials; seek to establish partnerships with other institutions for shared use of equipment; hold frequent meetings to discuss the research with the student, to identify strengths and potential weaknesses and, based on this recognition, establish new deadlines for each of the tasks, according to the difficulty reported; encourage the integration of undergraduate and postgraduate students to encourage collaboration between members of the working group; and perform part of the tasks that are the student's responsibility to assist in the progress of the research, however with reservations, as they understand that this is a responsibility that must be carried out by the student.

Providing greater interaction between undergraduate and postgraduate students is seen by respondents as a viable and very promising alternative for the development of research. Professor "A" gave a report that describes part of how this integration occurs:

As the projects normally integrate undergraduate and postgraduate studies, the scientific initiation student's first contact with the laboratory is mediated by the postgraduate students, who are responsible for presenting the dynamics of the laboratory, the equipment, techniques and basic instruments necessary to begin research development. Scientific initiation students, then, first accompany the master's students and, later, begin their own research, when they begin to carry out their own processing under my guidance (Teacher "A", 2023).

Respondents understand that part of the supervisor's role is to provide conditions for the student to carry out research, through the provision of equipment, materials, and assistance in bibliographical research. However, they are aware that, in addition to all this, guidance requires sensitivity to recognize the mentee's limitations, whether cognitive or even

interpersonal. Therefore, the dynamics of guidance, in addition to requiring a good relationship between supervisor and supervisee, requires conflict management between members of the work group.

5. Discussion

Participation in scientific initiation is recognized as an opportunity to consolidate knowledge for undergraduate students. Massi and Queiroz (2015) highlight participation in scientific initiation as a differentiator in the professional trajectory of students, as it develops cognitive aspects that favor academic performance and in the job market. Cabrero (2007, p. 214), also highlights this contribution to the critical and scientific training of students, the training of skills to express themselves in public and the improvement of writing skills.

Guidance work is fundamental in this process, as it guides the student to construct knowledge in an autonomous and genuine way. However, the path to be covered is extensive and involves awakening in the client the necessary commitment to the development of tasks, the provision of instrumentation and the management of interpersonal relationships, in addition to the instrumentation for research itself.

It is not a simple task, but based on the information collected in this study, the possibility of contributing significantly to the qualified training of students stands out as a factor that greatly motivates the insertion of teachers in the activity of advising undergraduate students in scientific initiation. .

Studies by Vieira et al, 2020; Silva and Vieira, 2015; Bianchetti and Machado, 2009; Leite Filho and Martins, 2006 on the relationship between supervisors and students in postgraduate studies, identified that the main difficulties faced are related to the short deadline for presenting results and, with this, highlights the importance of student commitment, repeatedly mentioned by participants in this research.

Just like postgraduate studies, scientific initiation requires the student to present the results obtained. National data published by the Center for Management of Strategic Studies (CGEE, 2017, p. 16), which indicates that 58% of scholarship holders declared that they had disclosed the results of their research at a national or international scientific initiation event, while 19% of fellows reported publication in national or international journals. However, for the participants in this study, the duration of the scholarship, 12 months, is considered short

and, consequently, a limiting factor for the contributions made by the undergraduate student to culminate in scientific publications of great impact.

The results obtained indicated that, in the advisors' understanding, the participation of these students in research projects is primarily aimed at learning research methods and techniques, which enable effective collaboration in projects, and serves as an opportunity to encourage student entry. in the master's degree, qualify them so that they are able to carry out research with greater impact in postgraduate studies and to be efficient in the face of the deadlines inherent to *stricto sensu* programs.

This understanding is in line with the prescriptions established by the National Council for Technological Development, which defines the Program's guiding objectives as aiming to contribute to the training of human resources for research and other professional activities, as well as to reduce the average length of stay of employees. postgraduate students (Normative Resolution n° 017/2006/CNPq).

However, to achieve this objective, the advisor often places himself in the position of a doer, imbued with raising financial resources, materials and inputs to carry out research activities. This is a potentially challenging situation, especially when added to the lack of time for students to carry out research activities, given the simultaneity with classes and other activities inherent to graduation.

Therefore, the institutional evaluation of students, through the preparation of partial and final reports, as well as the oral presentation at the seminar is, in general, understood by advisors as an ally in the process of monitoring students, especially when carried out by peers, who work in lines of research compatible with the work designated for their evaluation. However, the eventual lack of commitment can cause overload to the advisor, who, due to the need to comply with accountability standards, is forced to carry out actions initially delegated to the scholarship holder, since they understand that there is little autonomy to make adjustments. in the methods initially proposed in the work plan.

6. Conclusion

The present study, in an exploratory phase, identified and discussed the differences between the prescribed work and the real work of guidance in scientific initiation, and, based on the information collected, it made it possible to reflect on the discomforts and constraints to which these workers are subjected.

The main overload factor reported involves limited financial resources and unavailability of equipment and materials to carry out the experiments. The unavailability of the student to carry out some previously agreed assignments was also highlighted in the demonstrations.

To overcome these difficulties, holding periodic meetings and frequently reviewing the schedule and methods were the main strategies mentioned.

The results also indicated that advisors understand their responsibilities and adopt procedures consistent with established prescriptions, and are aligned with the program's objectives for the student. However, there is an opportunity to expand clarification regarding the institutional implications of possible withdrawals.

As a motivational factor, the contribution to the training of students stood out. However, it is important to think about strategies that increase the appreciation of this activity that is so relevant to the training of undergraduate students and, in this sense, this analysis stands out as an opportunity for future studies.

7. References

BIANCHETTI, L.; MACHADO, A. M. N. Trabalho professor no stricto sensu: publicar ou perecer? In: FIDALGO, Fernando; OLIVEIRA, Maria Auxiliadora; FIDALGO, Nara (Org.). A intensificação do trabalho professor: tecnologias e produtividade. Campinas: Papyrus, 2009. p. 49-89.

BRAATZ, D., ROCHA, R., GEMMA, S. Engenharia do trabalho, saúde, segurança, ergonomia e projeto. Santana de Parnaíba: Ex Libris Comunicação; 2021.

CABRERO, R. C. Formação de pesquisadores na UFSCar e na área de educação especial: impactos do programa de iniciação científica do CNPq. São Carlos, 2007. 276f. Tese (Doutorado em Educação Especial) – Centro de Educação e Ciências Humanas, Universidade Federal de São Carlos. Disponível em: <<https://repositorio.ufscar.br/bitstream/handle/ufscar/2830/TeseRCC.pdf?sequence=1>>. Acesso em: 10 dez. 2022.

CONSELHO NACIONAL DE DESENVOLVIMENTO CIENTÍFICO E TECNOLÓGICO (CNPQ). Resolução Normativa 017/2006, de 06 de julho de 2006. Estabelece normas gerais e específicas para modalidades de bolsas por quota no país. Brasília: CNPq, 2006. Disponível

em: <http://memoria2.cnpq.br/web/guest/view/-/journal_content/56_INSTANCE_0oED/10157/100352>. Acesso em: 10 mar. 2023.

CENTRO DE GESTÃO E ESTUDOS ESTRATÉGICOS. A formação de novos quadros para CT&I: avaliação do Programa Institucional de Bolsas de Iniciação Científica (Pibic). Brasília: CGEE, 2017. Disponível em: <<https://www.cgee.org.br/documents/10195/734063/PIBIC-pdf/820a833e-18e1-4a9f-a530-d649d2969398?version=1.1>>. Acesso em: 12 jun. 2022.

DANIELLOU, F. Um livro que mudará vidas. In: Braatz et. al. (org.) Engenharia do trabalho: saúde, segurança, ergonomia e projeto. Campinas: Ex Libris, 2021. Disponível em: <<http://engenhariadotrabalho.com.br/sobreolivro/>> Acesso em: 11 dez. 2022.

DIAS, A. V. C.; LIMA, F. de P. A.; REIS, L. F. Modelos de organização do trabalho: por uma organização colaborativa. In: Braatz et. al. (org.) Engenharia do trabalho: saúde, segurança, ergonomia e projeto. Campinas: Ex Libris, 2021. Disponível em: <<http://engenhariadotrabalho.com.br/sobreolivro/>> Acesso em: 11 dez. 2022.

LEITE FILHO, Geraldo Alemandro e MARTINS, Gilberto de Andrade. Relação orientador-orientando e suas influências na elaboração de teses e dissertações. RAE-Revista de Administração de Empresas. Ed Esp. Minas Gerais, v. 46, p. 99-109, 2006Tradução. Disponível em: <<https://www.scielo.br/j/rae/a/vwg6Yv6dm8fySXSZYWjkCfqd/?format=pdf&lang=pt>>. Acesso em: 20 jun. 2022.

MASSI, L.; QUEIROZ, S. L. Estudos sobre iniciação científica no Brasil: uma revisão. Cadernos de Pesquisa [online]. 2010, v. 40, n. 139. Disponível em: <<https://doi.org/10.1590/S0100-15742010000100009>>. Acesso em: 20 jun. 2022.

MASSI, L.; QUEIROZ, S. L. A perspectiva brasileira da iniciação científica: desenvolvimento e abrangência dos programas nacionais e pesquisas acadêmicas sobre a temática. In: MASSI, L.; QUEIROZ, S. L. (org.). Iniciação científica: aspectos históricos, organizacionais e formativos da atividade no ensino superior brasileiro. São Paulo: Editora Unesp, 2015. p. 37-56.

ROCHA, R.; VILELA, R. A .G.. Por uma cultura de segurança nas organizações. In: Braatz et. al. (org.) Engenharia do trabalho: saúde, segurança, ergonomia e projeto. Campinas: Ex Libris,

2021. Disponível em: <<http://engenhariadotrabalho.com.br/sobreolivro/>> Acesso em: 11 dez. 2022.

SEVERINO, J. A. PÓS-GRADUAÇÃO E PESQUISA: o processo de produção e de sistematização do conhecimento. Revista Diálogo Educacional, 2009. ISSN 1518-3483 Disponível em: <<https://www.redalyc.org/pdf/1891/189115658002.pdf>>. Acesso em: 20 jan. 2023.

SILVA A.H., VIEIRA K.M. Síndrome de Burnout em estudantes de pós-graduação: análise da influência da autoestima e relação orientador-orientando. Pretexto, 2015; 16(1): 52-68. Disponível em: <<https://dialnet.unirioja.es/servlet/articulo?codigo=5094539>>. Acesso em: 25 jan. 2023;

VIEIRA, M. H. P.; FONTES, A. R. M.; GEMMA, S. F. B.; MONTEDO, U. B.. Produtivismo na pós-graduação na perspectiva da ergonomia da atividade. Revista Educação e Pesquisa, 2020. Disponível em: <<https://www.scielo.br/j/ep/a/BGmCR6tLqr8ZLybLK43Zxvk/#>>. Acesso em: 18 jan. 2023.

YIN, R. K. Estudo de caso-planejamento e métodos. 2 ed. Porto Alegre: Bookman, 2001, p.205.