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SCIENTIFIC EDUCATION AT GRADUATE COURSE: AN APPROACH TO APPLIED LINGUISTICS

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ABSTRACT

It describes an approach to scientific education, developed and experienced in the training of teachers and researchers, in a graduate course in applied linguistic studies, in the Northern Region of Brazil. In this sense, this article presents the characterization of a tool called Science Education Circuit (SEC), used in course planning from the perspective of the mentioned approach. Documentary research also illustrates the challenges established in a task of scientific dissemination that is part ofplanning. It is based on an ant disciplined articulation of theoretical assumptions about research practices in teaching and teacher training. The study showed that the procedural facet of scientific education was favoredby the collaborative planning of the course, and it revealed four linguistic activities introduced in the rewriting of opinion articles produced and published in newspapers: lexical choice; defined nomenclatures; reference and citation; and focused content. This task guaranteed an experience of scientific dissemination by graduate students.

KEYWORDS: Scientific dissemination. Literacy. Course planning.

Introduction

In Brazil, literacy studies developed significantly in the past decades, which is evident in the different frames adopted by investigations on the culture of writing. Therefore, different labels are employed to name different investigative stances, for example, teacher literacy, academic literacy and scientific literacy. The first is employed in investigations concentrated on the writing practices that influence teachers' work (KLEIMAN, 2001; SILVA, 2012). The second is employed in investigations that involve writing at university in the role of mediating collective activities (FIAD, 2016; PEREIRA, 2018). The third label is characterized by abilities to deal with situations of daily interaction, influenced by knowledge and discourses involving science (SILVA, 2016, 2017, 2019, 2020a).

These three frames complement each other in the investigative and pedagogic approach to scientific education employed in pre-service teacher education or in the continued development of language teachers (SILVA, 2020b; SILVA; FERREIRA, 2021).

This approach enables professors to engage in research activity, recognizing themselves as producers of knowledge that guide their own professional practice. Moreover, it is desirable that they employ pedagogical strategies aligned to their experiences in teaching school classes.

These frames reveal the social commitment of investigations in the literacy studies,

consequently, the social responsibility of research in Applied Linguistics (AL), the field of investigation to which the present work belongs (SILVA, 2021). The scientific education approached originated in the sciences of nature but still incipient in the linguistic studies, for which it can lead to promising development for teacher education and language teaching
(SHAMOS, 1995; HOLBROOK; RANNIKMAE, 2009; LIU, 2009; SILVA, 2020a). Hence, the article discusses applied linguists can be educated to become motivators of scientific
education, assuming the exercise of communicating specialized knowledge (SILVA, 2021). This article concentrates on the process of scientific education experienced by graduation students in the field of applied linguistic studies. To that end, it describes the implementation of a circuit of assignments that organize the program of course in a stricture's graduation degree, and emphasizes the challenges faced by master and doctoral students in the process of (re)writing opinion articles for ordinary readers, which were published in local print newspapers. The opinion articles discussed the social contributions of
AL and constituted one of the assignments in the circuit.

The present work aims to fill in the gap in AL research and in pedagogic experiences informed by the scientific education approach in language teaching. The article stands out by sharing a productive collaborative teaching practice for graduation courses, which can inspire similar works in different areas or fields of knowledge, especially in the broad spectrum of Humanities.

This article is organized into four main sections in addition this introduction, the final remarks and the references. The first synthesizes the theoretical background of an approachto scientific education in teacher education from the in disciplinary perspective of AL. The second characterizes the educational context of the graduation course, and, concomitantly, describes a pedagogical tool to mediate the planning of the course. The third synthesizes assumptions from the systemic-functional linguistics (SFL) employed in the analyses of texts and describes the documents used in this investigation. The fourth section brings the analyses of linguistic activities implicated in the rewriting of opinion articles that were categorized in this research.

An approach to scientific education The first studies on scientific education related to teacher education and language teaching is recent (SILVA, 2016, 2020a, 2020b). On the grounds of this approach developed in AL, these studies defend the following theses or complementary purposes: (a) make visible linguistic studies as legitimate science; (b) conceive teachers as knowledge producers; (c) assume research as pedagogical strategy in teacher education; (d) assume research as pedagogical strategy in language classes.

Somehow the last three theses have already been discussed in less recent scientific productions, generated in the Science of Education, which conceives research as a type of scientific and educational principle in teacher education and for basic education schools, influencing bigger issues regarding the pedagogical work in different school subjects

(DEMO, 2010, 2011; FREIRE, 2017; FREIRE; FAUNDEZ, 2017; SCHÖN, 1991). These productions defend the continuous reflection on the teacher's part regarding their professionalpractice and propose pedagogies oriented by questions and by the creativity of participants in educational situations, in the opposite direction of reproductive or content-based teaching.The theses gain strength, accuracy and increase the interest in the visibility of language research when they are seen from the perspective of scientific education in the scope of linguistic studies. Therefore, the approach assumed here was constructed under the influence of studies from a prolific tradition in the natural sciences, involving more directly distinct pedagogical propositions for Biology, Physics and Chemistry classes. These investigations started around the first half of the 20th century, after World War II, justified by distinct interests, from the need to change course programs for more functional and productive teaching models, to demands regarding the strengthening of great nations through the robust scientific and technological development (HOLBROOK; RANNIKMAE, 2009; LIU, 2009; SHAMOS, 1995). According to Liu (2009), the interests of research on the topic are various and summarized as: (1) enabling better political decisions and economic outcomes; (s) helping to reduce superstitions; (3) improving individual behavior; (4) helping to create a more ethical world (LIU, 2009, p. 303).

The SEC is conceived as a pedagogical tool to organize the course program and tocreate educational situations that allow students the experience of scientific or investigative practices. The collaborative construction of the work is the main feature of this tool, therefore, the assignments are not exclusively idealized or planned by the professor in charge of the course. A different version of this tool is used in under graduation courses, which listsintermediate assignments executed by students under the professor supervision to generate afinal product (SILVA, 2020b). In Figure 2, the assignments were proposed to generate two intermediate products – the opinion articles and the documentary – which contributed directly to the collective elaboration of the final product – scientific articles. The probability of different outcomes also show the possible applications of SEC.

Characterization of the investigated documents The documents under analysis here are the different versions of the opinion articles

produced during the graduation course in question. At the time, the versions were archived as documents for research purposes. Later, the professor recollected the pedagogic experience based on the circuit and investigated the documents to understand and strengthen the collaborative approach to teach at graduation teaching. A preliminary version of this scientific article was shared with the authors of the opinion articles in which relevant linguistic activities were identified in the process of rewriting. The treatment of the documents and the results were confirmed by the authors in a method that is typical of investigation involving collaborators or AL research participants (KLEIMAN, 2002; SILVA, 2010). The opinion articles were approached qualitatively, since their analyses relied on the theoretical assumptions introduced earlier (HOLBROOK; RANNIKMAE, 2009; LIU, 2009; SILVA, 2020a, 2020b; to name a few) as well as on the socio-semiotic

notion of language for text analysis (HALLIDAY, 1985; HALLIDAY; YALLOP, 2008), as described ahead.

Final Remarks

The experiences of collaborative teaching at level revealed the need and the productivity for the "science and public" perspective, defended by Liu (2009). Hence, the Science Education Circuit (SEC) has become a powerful tool for collaborative planning, involving the continuous negotiation between the participants in the educational process – graduation and under graduation students. The assignments in the Circuit fostered educational situations that allowed the participants to experience relevant research and scientific communication practices.

Despite the fac that master's thesis and doctoral dissertations are products of systematic research, the latter is not always present in courses taken at graduation level. The experience reported here involved community outreach, as the opinion articles were made available for a reading audience of uncalculated reach. Therefore, the present article can be used as reference for future articulations of academic activities.

The graduation students committed to the assignments and demonstrated excitement and gratification in the face of the outcomes produced in the course. The principles of scientific education listed in previous research (SILVA, 2020a) were mobilized (curiosity, communication, collaboration, creativity, persistence, relevance and investigation) and, certainly, the competences described here were improved due to team work (curiosity, communication, collaboration, creativity, criticism, compassion, control and citizenship).

Scientific education must be part of the pre-service education in the various fields of knowledge and not limited to a Graduate Program with that particular aim, as recommended by Liu (2009). In Brazil, the scarcity of public resources, the likely inexistence of private resources to fund AL research, as well as the limited representations about science shared by society urge the adoption of the pedagogical and the investigative approaches of scientific education in language studies graduate programs. Finally, considering the social commitment of AL research, it is indispensable that the approach of scientific education is widely adopted by applied linguists. In addition to investing in research on the subject, these researchers cannot ignore scientific communication. Explaining research to the ordinary citizens must become common practice, only then will they become well-informed allies.

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