



Promoting Diversity: Heterogeneity-Sensitive Teaching of Scientific Writing

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Abstract

This paper presents a theory-led case study for a more diversity-oriented approach towards facilitating scientific writing skills in academia. Instead of promoting individual groups of students (segregation) or adapting students to the higher education system (integration) and thus excluding individual students, our goal is to establish a more inclusive approach towards academic student support.

Keywords: *Scientific Writing; Diversity; Heterogeneity*

1 Introduction and State of the Art

For a growing number of prospective students, taking up a course of study is associated with many different barriers. Interdisciplinary competences are hardly addressed in primary and secondary education and are therefore differently developed at the initial study phase. Besides, the individual needs of students have increased [1]. In Germany, nationwide representative studies (DZHW, 2007-2018) on self-perceptions of first-year students show a trend towards a feeling of being overburdened with the multiple new requirements that are connected with admission to university. Scientific writing in particular – which is a central requirement across all academic disciplines – presents students with challenges [2].

Currently, university entrants of all fields of study and types of college are widely (45.9%) confronted with difficulties when conducting basic disciplinary tasks like writing a term paper, a report or thesis [3] – over half of this sample (25.7%) even face "great difficulties". Manifold reasons account for this situation: For instance, non-native speakers especially with migration background or from first-time academic families are challenged by adopting peculiarities of their discipline's scientific language [2]. Moreover, the number of students with special needs is constitutive here: The results of the 21st Social Survey conducted by the German National Association for Student Affairs are representative for Germany, and they show that currently around 11% of students have a disability that makes studying difficult [4]. This represents a 4%-increase between their 2012 and 2016 surveys. Universities try to counteract by curricular measures (such as new methodological courses) or institutional support services. However, such services are predominantly used by traditional students. Although efforts to reduce barriers to education intensify in quantity, they usually do not take into account the specific support needs of an increasingly heterogeneous group of students: therefore still only part of the students are reached.

One significant reason, we suspect, is related to the fact that when conceptualizing these support formats, it has hardly been considered, how different heterogeneity characteristics interact, such as biographical aspects (age, gender, etc.), socio-demographic aspects (life context, educational biography, etc.) or intramural aspects (course of study, degree) [5]. Many writing projects and writing centers at universities and colleges will be closed at the end of this year (2020) as a result of an expiring nationwide funding program by federal and state governments "Quality of Teaching Pact (QPL)". This could lead to a further deterioration in the supervision of scientific writing in the future.

Against this background, this article examines the question of which criteria should be normatively taken as a basis for diversity-oriented guidance within the disciplines with a focus on scientific writing. First of all, the theoretical basis for this is to be created. Using a case study, a possible solution is outlined in the form of a learning module that can be transferred to other institutional contexts.

2 Approach

Our approach follows the concept of student-centered teaching, in which all students can participate in the university community [3, p. 180]. At the same time, it is important especially for disadvantaged groups, to prevent an implicit 'compulsion for self-change' in higher education, which means that students are only successful if they can adapt themselves sufficiently to the 'university system' [7, p. 63]. Instead of promoting individual groups of students (segregation) or adapting students to the higher



education system (integration) and thus excluding individual students, the goal of future concepts of higher education learning should be to strive for an inclusive higher education system [9, pp. 21-22]. This would go along with a new way of considering diversity, hence the 'shaping of a heterogeneously fair cooperation' through the careful and open handling of heterogeneity characteristics [8, p. 72].

3 Course of Action

Various measures are necessary to achieve a diversity-led attitude towards a more inclusive approach concerning academic student support. Opportunities have to be created for students to learn more from and with each other. Teachers have to take a back seat by acting as learning companions and mediators between learners, goals and content [8]. Thus, self-directed learning becomes the focus of teaching [6, p. 20]. Teachers can make use of sensitization tools such as the multi-level approach to diversity management [9, p. 23] in order to

- encourage students as part of an *academic community*,
- interact in an *academic team* and
- appreciate *academic individuals*.

To promote diversity-sensitive teaching, different methods, tasks and media can be used. The Universal Design of Learning [10, pp. 212f.], among others, provides various approaches to make teaching not only more accessible, but even barrier-free for some of our target groups. Blended-learning concepts offer a special potential for diversity-oriented curricula, especially in the context of academic writing [11].

4 Example of Implementation

How these measures can be implemented in practice will be explained in more detail below on the basis of interdisciplinary seminars for scientific writing.

4.1 Starting point and general conditions

In the following, a seminar concept will be presented, in which four to five times a year all-day meetings are organized by the student union (AStA) at the FernUniversität in Hagen, which is Germany's only state distance-learning university, and its largest in terms of student numbers. The seminars address students with special support needs and they are conducted by Louise Hoffmann. Each seminar is attended by 15 to 20 distance-learning students and lasts 3-4 days during the semester's marginal times. The participation costs are covered by the AStA and are subsidized by the Federal Ministry of Education and Research (BMBF).

Particular attention is paid to the individual needs of students. This is realised by means of a four-stage feedback system, which has been developed in the last years and consists of these four stages:

- Preliminary assessment of special needs when registering participants for the seminar.
- Anonymous formative evaluation during the seminar by depositing a feedback sheet in a bag that is regularly emptied in order to be able to make ad-hoc adjustments to the course interactions.
- Interim conclusion after each completed seminar unit through team discussion and individual reflection of the acquired knowledge on a team flipchart.
- Common evaluation sheet at the end of the course for the students' self-assessments with regard to learning success, competence development and potential for improvements.

The aim of the seminars is not only an introduction to scientific writing and, indirectly, to self-directed learning, but also the exchange of ideas and experiences among the participants and, in connection with this, learning from each other.

4.2 Procedures

At the beginning of the seminar, all participants receive a reader with materials from the speaker to continue the implementation of the seminar contents in self-study. Both the reader and the presentation materials are designed to be barrier-free, e.g. by using a strong contrast and a description of the images or graphics.

The course addresses the three diversity perspectives according to Auferkorte-Michaelis [9, p. 23]: the community, the team and the individual-distance learning students. It provides for a high proportion of discussions as well as team and individual work and few mediation components. Due to the different



impairments and previous knowledge of scientific work, the exercises are planned in such a way that they can be completed by the expected target group either alone or with the support of a second person. In accordance with the Universal Design of Learning [10, pp. 212f.], students are offered different approaches to the learning content, which they can absorb by hearing, seeing or touching. Results of a mixed-methods study between 2018 and 2019 show that the use of "LEGO® Serious Play" can be a great benefit in this context [12]. By making others "build" their writing assignment, students must be careful to describe their wishes as precisely as possible.

In addition to different sensory channels, an attempt is made not to perceive the respective impairment of a person as such, but to focus on individual strengths (cf. the concept of "multimodal promotion of writing skills" in [13]). Thus, the aim of the team and individual exercises is that all students actively participate and have a sense of achievement: Since the acquisition of scientific language is not a straightforward process even for native German speakers [14], the seminar is used to sensitize all participants to the differences between scientific language and everyday language. The following exercise addresses this issue. It is based on the principle "Silent Mail": Person 1 formulates an everyday sentence at the top of a sheet of paper, which person 2 paraphrases in scientific style. Then person 2 folds the everyday sentence on the back of the paper so that it is no longer readable. Person 3 tries to "retranslate" this phrase into an everyday sentence, etc.

5 Critical Analysis

The various aspects of scientific work addressed in the course framework can be conveyed especially due to the heterogeneity of the students and on the basis of the selected exercises: Since physically-limited students interact with students without any particular restrictions in the "LEGO®-Exercise", mutually stimulating learning processes and a broadening of horizons are initiated. Besides, the educational interventions contribute to new perceptions and evaluations of the respective other. With regard to the exercise "Silent Mail", the evaluation of a survey showed that the discussion among the participants about their sentences often served as an eye-opener with regard to language barriers in scientific style. After the exercise students generally felt less deterred by the use of scientific style.

Due to the specific interactions we observed during the seminars, we assume that the learning setting described here has a stimulating effect on the development of relevant aspects of scientific competence as a whole. A high degree of diversity orientation also seems very conducive to critical meta-reflection and a controversial discussion of the learning content.

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