A Comparative Analysis of Domestic German for Specific Purposes (GSP) Textbooks

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Abstract
Teaching German as a foreign language for scientific and technical communication is becoming increasingly important in China. German for Specific Purposes (GSP) textbooks play an important role in this, but their specific offerings have not been thoroughly discussed. This study examines seven GSP textbooks published in China until the end of 2020. Quantitative methods are used to analyze these textbooks in order to identify and compare measurable components. A self-developed list of criteria is used to evaluate selected domestic GSP textbooks, forming a baseline inventory. The analysis shows that these textbooks not only cover scientific and technical topics, but also address language aspects such as vocabulary, terminology, and grammar. They help to achieve general learning goals, such as grasping specialized language nuances and introducing basic subject knowledge. However, these textbooks also have some weaknesses: The emphasis is on reading development, which reduces specialized language training to specific skills. Teacher's guides and practical exercises are also lacking. Many of the books studied lack a progression of content.

Keywords
Domestic GSP teaching textbooks, textbook evaluation, GSP teaching

1. Introduction
Sino-German government cooperation has developed in recent decades, particularly in the field of education. Projects promote university partnerships, notably the German-Chinese Double Degree Program, which combines German and Chinese studies for international double degrees, often in engineering and science. German is taught for technical communication, but specialized language training is often integrated into existing courses (Zheng Yu, 2015).

Textbooks are primary resources for language acquisition, serving as the basis for institutional language teaching and individual study. In the field of specialized language teaching and didactics, specialized language textbooks hold a special position and offer clear support (Buhlmann Rosemarie & Fears Anneliese, 2018). They facilitate linguistic exchange and provide learners with access to subject matter, preparing them to engage with specialized content.

2. Research Status and Objective
In China, specialized language research began in the early 1980s, primarily studying German scientific and technical language through systemic linguistics, emphasizing lexicon and syntax. Later, fields such as economics, law, and computer science gained attention. Research focused on their structures (Li Dongliang & Liu Shujie, 2019) and pedagogy (Zheng Yu, 2020), with special attention to business German (Zhu Lianlian, 2022).

This study addresses an unexplored area: GSP textbooks in China. With the exception of Zhao (1998), no other
publication has analyzed them despite their proliferation. It is essential to conduct an analysis of their quality. Through the establishment of analytical criteria, this study scrutinizes the aforementioned textbooks, offers a fundamental inventory, and proposes potential avenues for future research.

3. Theoretical Framework

Effective specialized communication requires precision, explicitness, economy, and anonymity, which define functional features. These distinctive features manifest themselves in common specific linguistic structures across various levels (Roelcke Thorsten, 2020). A large body of research has focused on the structural features of specialized languages. Based on these contributions, the characteristics of German technical languages can be generally characterized as follows: At the word level, there are alterations of everyday terms in a specialized context, loanwords from foreign languages, compound formations of nouns, verbs, adjectives, and adverbs, as well as formations through prefixes and suffixes, metaphors, abbreviations, and collocations. At the sentence level, passive constructions, subordinate clauses with/without conjunctions, nominalized subordinate clauses, and sentence positioning are typical of specialized languages. Notable features at the text level include the conventionalization of distinctive text structures, as well as relationships and references between sentences.

Buhlmann and Fears' "minimalist" criteria provide a valuable framework for analyzing specialized language textbooks (Buhlmann Rosemarie & Fears Anneliese, 2000). They include approach, specialization, audience, objectives, progression, content, exercises, review, method, and use. Funk suggests a framework of questions to assist in textbook selection (Funk Hermann, 2004). Textbooks designed for teaching German as a foreign language undergo evaluation based on twelve quality criteria, including media design, curriculum alignment, institutional relevance, and others. While this framework is intended for the analysis of general language textbooks, it is also applicable for assessing GSP textbooks.

4. Study Design

The analysis of the textbooks is done using quantitative methods to measure specific units within the textbooks and make comparisons. The analysis involves the examination of chosen GSP textbooks based on a set of criteria developed internally.

4.1 Corpus of the Study

The corpus is limited to GSP textbooks published by Chinese publishers and available on the market until the end of 2020. The GSP textbooks are:


4.2 Analysis Criteria

These theoretical considerations and established criteria catalogs provide a foundation for the development of our own analysis framework. Figure 1 below illustrates the foundational analytical framework utilized for the evaluation of textbooks.
5. Results of Textbook Analysis

5.1 Components of Textbooks

The textbooks analyzed show considerable diversity in their components. Not all textbooks meet the standard of a media bundle consisting of textbooks, workbooks, teacher’s guides, and audio materials. However, all the analyzed textbooks combine instruction and practice. Foreign language textbooks usually include audio materials, but this is the case for only three GSP textbooks. Remarkably, none of them offers a teacher’s guide. This limited offering is in line with the specific learning objectives of each textbook. In some textbooks, the focus is on improving comprehension of technical texts, so audio materials are not essential in these cases.

5.2 Target Audience and Learning Objectives

The textbooks reviewed are tailored to the university level and are designed to cover various disciplines. They are primarily aimed at advanced learners of German or German Studies students who specialize in technical German. Of the five textbooks, two are primarily designed for classroom use, while one is suitable for limited self-study alongside a course. In terms of language proficiency, all of the textbooks assume prior knowledge of German. However, only two are clearly aligned with CEFR (Common European Framework of Reference for Languages) levels (starting at A2/B1). For the other textbooks, the language requirements are inferred indirectly by the assumed instruction hours.

The identified target audience includes both German Studies students and advanced language learners. While some textbooks outline their learning objectives in general terms, others provide more detailed goals. Except for the textbook "Hörtexte aus Naturwissenschaft und Technik", which specializes in training listening comprehension, all other analyzed textbooks emphasize the development of specialized reading comprehension. The textbook "Wissenschaftliche Lesetexte und Übungen" focuses specifically on improving comprehension of technical texts. In contrast, other textbooks go beyond individual skills and encompass translation, listening comprehension, oral, and/or written expression.
Reading comprehension and translation are most often combined, especially in the textbook "Allgemeinwissenschaftliches Deutsch", which covers all four skills and can prepare learners for exams such as TestDaF or DSH. In contrast, other textbooks emphasize one or two skills, without explicitly preparing students for language or subject-specific exams.

5.3 Structure and Design

As for the structure of the textbooks, elements such as preface, table of contents, thematic lessons, and answer keys are present, which are standard components in general language textbooks. In particular, the textbook "Lektüre von wissenschaftlichen und technischen Fachtexten" lacks an answer key. In addition, three textbooks contain a glossary in the appendix, and transcriptions are provided in books focusing on listening comprehension.

In terms of lesson structure, the majority of the textbooks analyzed contain either a longer text or several shorter texts for reading or listening comprehension, along with vocabulary and/or grammar exercises. Three textbooks deviate from this pattern by excluding exercises to train the structural features of technical languages. Some textbooks that emphasize the training of translation skills incorporate skill-specific exercises at the end of the lessons. Except for two textbooks, all textbooks list relevant vocabulary either before or after the text to be worked on. Furthermore, two textbooks provide explanations of content and grammar. Three textbooks include preparatory exercises for orientation or to introduce the topic. In particular, the textbook "Lesetexte aus Naturwissenschaft und Technik" offers a self-test option.

5.4 Methodological and Didactic Approach and Learning Content

Four of the analyzed textbooks take a hybrid approach that combines language with skill orientation to develop specialized communication skills and teach language structures. Two others prioritize skill development, focusing on reading and listening comprehension in specialized contexts. The textbook "Auslese der aktuellen Texte über Wissenschaft und Technik" tends to use language-oriented methods, emphasizing the linguistic features of technical languages.

All of the analyzed textbooks cover standard topics in scientific or technical fields. Major topics include everyday technology, medicine, computers, and the environment. Some explore specific subfields such as automotive engineering and nanotechnology. The textbook "Wissenschaftliche Lesetexte und Übungen" introduces a general topic (family in Germany) in addition to specialized topics, but it may be less relevant to the audience.

Often, adapted popular science texts or online articles are used. The difficulty level varies widely, with popular science texts being comprehensible due to their reliance on general knowledge. In contrast, others use edited academic texts or videos with a higher level of complexity.

Only two textbooks have a clear thematic progression: "Hörrtexte aus Naturwissenschaft und Technik" and "Lektüre von wissenschaftlichen und technischen Fachtexten." They start with related topics and progress to more complex topics, incorporating essential language tools for deeper understanding.

5.5 Exercise and Task Design

The analyzed textbooks all contain numerous exercises and tasks aimed at developing specialized language competence. However, most of these textbooks contain mainly receptive or reproductive exercises that assess knowledge or practice language structures. Such exercises make up about 90% of the content and focus primarily on language acquisition and comprehension. In terms of types of exercises, there are closed, semi-open, and open formats, although their distribution varies significantly among textbooks. More than half of the textbooks prefer open formats, such as answering questions. Exercises related to linguistic forms are decontextualized, and there are no organizational or methodological user instructions.

In the two textbooks that follow a skills-oriented approach, there are no exercises aimed at practicing specialized language structures. Instead, the built-in exercises are designed to assess comprehension in reading and listening. On the other hand, the other textbooks contain many content-oriented exercises targeting specialized linguistic phenomena. However, none of the selected textbooks incorporate learner-oriented elements into their design. Although the textbook "Allgemeinwissenschaftliches Deutsch" emphasizes the development of subject-specific working strategies and thinking skills, it does not provide tasks or exercises to enable the acquisition of these strategies.

6. Conclusion and Outlook

The selected specialized language textbooks not only cover scientific and technical topics, but also address the comprehensive language needs in vocabulary, terminology, and grammar. These materials help achieve common learning goals,
such as acquiring specialized language nuances and introducing basic subject knowledge. However, there are notable shortcomings:

6.1 Components and Structure

Upon analysis, it's evident that these specialized language textbooks deviate to some extent from the standard components of general language textbooks. They often integrate a coursebook and a workbook in a single volume and lack a teacher's guide. A teacher's guide for specialized language textbooks is not only helpful but sometimes essential. Language teachers are not usually subject matter experts, and explanations of subject matter and didactic guidance for teaching specialized language structures are essential reference points for classroom practice.

In the reviewed textbooks, the emphasis is on developing reading skills. This approach narrows specialized language teaching to the cultivation of specific sub-skills. Furthermore, only one textbook offers supplementary online material. As a result, online resources don't seem to receive much attention in the design of specialized language textbooks. In contemporary educational practice, the provision of digitally available teaching and learning materials and internet resources has become commonplace. There are many advantages to using online resources. Roche emphasizes the personalization and intensification of language learning through various offerings that allow learners to better address individual interests and aptitudes, and provide the opportunity for intensive, independent work, possibly in conjunction with tutors (Roche Jürgen, 2020).

6.2 Thematic Focus

To reach a wide audience, most textbooks take an interdisciplinary approach. As a result, the range of topics is broad and includes subjects from major fields such as technology, medicine, and computers. Authentic popular science texts dealing with current general science issues are predominantly used. This leads to a disconnection between the learning content and specific subject-curricula, which may not meet rigorous subject-specific quality criteria. There is a lack of precise alignment between content and the needs of specific learner groups and teaching contexts. In addition, experts from the respective disciplines do not contribute to the creation of these specialized language textbooks. As a result, many of the examined textbooks lack a well-defined subject-specific progression. Their form tends to hinder the necessary process of knowledge construction.

6.3 Learning Objectives

The mastery of specialized language and the teaching of basic subject knowledge are the primary learning objectives in almost all of the textbooks analyzed. Consequently, these textbooks focus primarily on raising awareness of grammatical structures and technical vocabulary, as well as comprehension of technical texts. However, they often neglect the transmission of subject-specific and linguistic learning and working strategies.

6.4 Exercise Materials

The materials analyzed offer a variety of exercises, but they often lack relevance to the real language use of the target audience. They mainly consist of receptive or reproductive exercises with strong guidance and limited interactivity. Exercise objectives sometimes focus on learning formal features of domain-specific language or testing text comprehension, based on a behaviorist approach. There's a lack of tasks that meet the demands of authentic professional communication and develop language skills in specialized contexts. From a constructivist perspective, exercises should have communicative goals and serve specific functions. Therefore, the selection of functionally relevant practice materials from real educational contexts is crucial to promote exploratory and problem-solving learning.

Since the “communicative turn”, foreign language teaching has emphasized action and competence orientation. These principles should also be applied to the teaching of technical language. It's crucial to define the target group precisely in order to derive specific language use situations. The thematic orientation should meet the needs of the learner group. The available tasks should meet the demands of real communication situations. Authentic and purposeful domain-specific interaction should be facilitated through a variety of materials that take into account learners’ interests. In specialized language teaching, the development of domain competence is also important. Therefore, learning objectives should be derived from the needs of specific target groups in order to develop a structured, theoretically-based learning program.
Funding
It is supported by the Faculty Development Research Project of the University of Shanghai for Science and Technology (CFTD2023YB45); This paper is the stage research result of the Research Project of Teaching and Teaching Reforms 2023 of University of Shanghai for Science and Technology, “Exploring the Foreign Language Teaching Mode for Internationalized Engineering Talents in the Perspective of Sino-German Cooperative Programs”.

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