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A Language-Sensitive Textbook Analysis

Tasks and Texts Used to Teach Business at German Vocational Schools

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Abstract *Germany has a significant number of people who did not learn German as their first language. For this learning group, German can represent a challenge to achieving a successful vocational education, but even native German speakers can experience language difficulties; one approach to overcoming language barriers is language-sensitive teaching. Textbooks serve as a didactic medium for planning, initiating and supporting school learning processes, and this paper investigates the extent to which textbooks for business education at vocational schools are designed to be language sensitive. An analysis of a textbook from a language-sensitive perspective reveals that the majority of the text and tasks in the textbook have language-sensitive elements but that there remains potential for improvement at the word, sentence, text and visual levels of analysis.*

Title *A Language-Sensitive Textbook Analysis. Tasks and Texts Used to Teach Business at German Vocational Schools*

Keywords *language-sensitivity; textbook analysis, learning task, Germany, vocational school*

1 Introduction

Germany has a significant number of people who do not speak or have not learnt German as their mother tongue. This first language barrier became apparent with labour migrants who came to Germany in the 1950s and 1960s through bilateral agreements between the Federal Republic of Germany and several other countries to fill labour shortages. The recruitment stopped in 1973, but many of the 14 million migrant workers remained in Germany. They also brought their families with them, meaning that the num-

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ber of people who did not speak German as their first language grew steadily over the years (Herbert & Huhn, 2001). More recent phenomena have ensured that the issue of German as a second language remains topical. The Syrian conflict in the 2010s led to several waves of refugees reaching Germany, among other countries: there were around 33,000 people from Syria living in Germany in 2011, but this had risen to around 870,000 by the end of 2021 (Statistisches Bundesamt, 2023). The conflict in Ukraine has also produced large waves of refugees; the number of Ukrainian citizens in Germany rose to more than a million in 2022 alone (Statistisches Bundesamt, 2023). All school and vocational education and training programmes now include children, young people and adults from these refugee communities, and German language competence is a challenge for a successful education.

However, German as a second language is not the only cause of language barriers; even native German speakers can experience language difficulties. There are many reasons for this, from a lack of education in the family to cognitive issues (Scharff Rethfeldt, 2013). It should be noted that these students, just like migrant students, need language support to first develop their educational language skills and then to achieve subject-related learning objectives.

Various approaches and measures have been proposed to overcome language barriers. One suggestion that is often made is language-sensitive teaching, which, broadly speaking, encompasses measures and actions to help learners with language difficulties to overcome language barriers in the classroom. Language is a competence that should not be assumed; instead, the individual language competences of the learners should be sensitively considered. Appropriate measures may relate to different elements of the lesson, such as planning, the teacher's mode of expression and language aids (Rossner & Bolitho, 2022). Textbooks are such an element; they convey information mainly through language (Macgilchrist, 2018), play an important role in school learning and serve as a didactic medium for planning, initiating and supporting school learning processes (Vera, 2018).

This paper investigates the following research question: to what extent are textbooks for business education at vocational schools designed to be language sensitive? To do this, one textbook from a full-time vocational school will be analysed from a language-sensitive perspective.

2 Theoretical Context: Language-Sensitive Teaching and Language-Sensitive Research

Becker-Mrotzek and Roth (2017) emphasise that language skills are a key prerequisite for educational success and for professional and social participation. They also argue that too many students in Germany leave school without sufficient language skills. Educational language, which is fundamental to the acquisition of academic knowledge, is rarely taught explicitly in the classroom (Becker-Mrotzek & Roth, 2017), and students who do not have extended educational language skills from home may therefore encounter language barriers and develop content deficits. It has been recognised in educational policy that language teaching and promotion must take place at all levels

of education and in all subjects. As early as 1999, the Ministry for Schools, Youth and Children (MSJK, 1999) declared the promotion of the German language to be a teaching task in all subjects, and towards the end of the 2000s, subject didactics also began to focus more on the topic (Boubakri et al., 2017). One result of these educational policy discussions is the idea of language-sensitive teaching; even if this alone does not lead to internal differentiation, it can allow for students with different language learning needs and enable them to improve their language skills.

The term 'language-sensitive teaching' encompasses various teaching concepts that consciously use language as a means of thinking and communicating in order to link subject learning with language learning. These concepts, which are also termed 'language aware' or 'language responsive', ultimately aim to make it easier for students to achieve their subject-related learning goals and to develop cross-curricular language skills in the long term (Shanahan & Shanahan, 2008; Schleppegrell, 2004). Even if, at first glance, learners with a migration background appear to be the primary recipients of language-sensitive teaching, the concept actually seeks to include all 'language-weak' learners, including native German speakers.

The guiding principle of language-sensitive subject teaching is that students should be treated individually by teachers who are sensitive to their individual language competences and to the language used in teaching and learning (Shanahan & Shanahan, 2008; Schleppegrell, 2004). Language is understood as a medium for subject-related learning that should not create avoidable linguistic barriers in that role; conversely, language learning is subject-related, i.e., language is learnt through the subject content (Leisen, 2013).

Leisen (2013) identifies three basic principles for individual support:

- Language situations should be technically authentic but manageable.
- Language requirements should be just above the learner's language ability.
- Learners should be given as few language aids as possible but as many as necessary.

2.1 Textbooks for Vocational Learning

One of the most commonly used teaching materials in schools is textbooks, which are core instruments in almost all subjects. In textbooks, knowledge is primarily conveyed through language, and acquiring knowledge through textbooks therefore requires language competence. The way language is used in textbooks is therefore relevant not only to subject learning but also to language learning (Macgilchrist, 2018). For learners with language difficulties to be able to use their textbooks for subject and language learning, the language in them must be used purposefully so that it is not a barrier and so language skills can be developed.

However, the definition of a textbook is not always consistent. As a didactic medium, textbooks should serve to plan, initiate, support and evaluate school learning processes. In short, textbooks should serve as pedagogical aids and a source of information, both in terms of content and in terms of structuring that content and providing a consistent theme for the teacher and learners. Textbooks are also political because they are 'embedded in a political, pedagogical-didactic and socio-economic context' (Wiater, 2003, p. 12),

and they are politically significant because the state indirectly controls teaching–learning processes in schools and the development of the skills, attitudes and behaviours of young people by allowing textbooks only under certain conditions (Höhner, 2005).

In Germany, the approval of textbooks is regulated differently in each of the federal states. In most cases, approval is granted by the competent state Ministry of Education and Cultural Affairs (*Kultusministerkonferenz*) or a subordinate authority (Kultusministerkonferenz [KMK], 2023). In North Rhine-Westphalia, only approved learning materials may be used in schools, and all such materials must meet certain criteria to be approved, including federal state guidelines, mandated curricula, teaching standards and legal requirements. They must also provide learning opportunities and reflect the latest scientific knowledge. The approval of a learning aid or textbook can be granted through an expert procedure, a simplified procedure or a general approval, and the state's Ministry of Schools and Education (*Ministerium für Schule und Bildung*) determines the approval procedure for subjects in the different types of schools (Schulministerium NRW, 2023).

This significant interaction between textbooks, curricula and their functions means that traditional textbooks still play an important role in teaching in the German education system and are still seen as supportive and motivating by both teachers and learners in many subjects and regions of Germany (Fuchs, Niehaus & Stoletzki, 2014). Nevertheless, it has been claimed that textbooks rarely meet the expectations of teachers in Germany in view of the increasing heterogeneity of society (Fuchs et al., 2014), while some teaching and learning studies argue that understanding technical writing is essential for textbook work and learning (Oleschko & Moraitis, 2012). Wiater (2013) also emphasises that it is not only students whose first language is not German who have problems with the language in German textbooks: 'It is also [a problem] for native German-speaking students who have a restricted language code or dialectal language peculiarities' (p. 17). Various requirements are therefore imposed on textbooks to improve students' understanding. As the subject matter and thus the linguistic demands become more complex over the course of students' school years, so the language problems of students with language difficulties grow. These demands also affect textbooks and are reflected, for example, in the terms and structures used becoming more complex and the information being condensed and presented in a more abstract way (Schmölzer-Eibinger & Egger, 2012; Macgilchrist, 2018).

2.2 Learning Tasks for Vocational Learning

Teachers encourage students' learning through tasks appropriate to the teaching and learning objectives set, which can be taken from a textbook or from other sources. Tasks play a role at both the end and beginning of the teaching–learning process; tasks that occur at the end include learning assessments, examinations and exercises to prepare for examinations, but learning tasks can be used in all phases of the learning process that enable learning itself and contribute to the social function of schools (Richter, 2012; Nikolaus, 2016). Although other functions are possible, the following are the main functions of tasks (Thonhauser, 2008):

- Operationalising learning objectives
- Stimulating learning as learning tasks
- Determining learning outcomes as assessment tasks

The task culture aims to achieve standardised skills among students and to bring the German language back into focus (Oleschko & Moraitis, 2012; Crookes & Gass, 1993). In their interdisciplinary model of task quality, Blömeke, Risse, Müller, Eichler and Schulz (2006) emphasise the need for linguistic references:

> At the same time, however, there must be an opportunity to master the task. If a task seems so difficult to the students that they see no chance of mastering it, they are likely to turn away from it. … In this context, however, it is also important that the task is understandable, i.e., that the students can grasp it in terms of content and language. (p. 336)

The ideas set out in this section illustrate the importance of textbooks and textbook tasks for school and classroom practice. It is clear that the linguistic aspect must be considered in both the development and evaluation of these central elements of teaching.

3 Methodology

Content analysis was used in this study to analyse the selected textbook (Mayring, 2021). Categories of analysis were defined that focused on the linguistic design of the textbook in the context of the subject matter of the book and the research question of this study, and the category system and coding guide are described below.

3.1 Selected Vocational School Programme

Vocational school courses are divided into different fields, such as business, handcrafts, hospitality and health care (see Ministerium für Schule und Bildung, 2023). The *Berufsfachschule* vocational programme is examined here, which enables the acquisition of the extended first school leaving certificate (*Hauptschulabschluss* after 10th grade) and requires a first school leaving certificate (*Hauptschulabschluss* after 9th grade). This programme can bring together students with a wide range of learning needs and sociocultural backgrounds, including those from international support classes, those with a migrant background and those from educationally disadvantaged families, for all of whom language-sensitive textbook design is of great importance.

3.2 Object and Units of Analysis

In this study, a textbook used in schools for teaching economics was analysed to determine whether and to what extent it was designed to be language sensitive. A textbook from a vocational school was chosen because such programmes tend to be attended by

linguistically weaker students (Beicht & Eberhard 2013), who would benefit greatly from language sensitivity.

At the beginning of 2023, 22 municipal vocational schools in Aachen and Cologne, in the state of North Rhine-Westphalia, were contacted and asked which textbooks were used for teaching business subjects. After a reasonable waiting period, ten responses were received – a response rate of 45 %. Some teachers stated that they did not use textbooks at all or used them only occasionally to extract texts, graphics or exercises for certain areas. A number of different textbooks were mentioned.

In the end, a textbook mentioned three times was chosen: *Geschäftsprozesse im Unternehmen – Lernsituationen für die BFS 1* (Business Processes in the Company – Learning Situations for the vocational programme '*Berufsfachschule*' published by Europa-Lehrmittel. The book has been available digitally since 2022, was written by Dr Karin Huse and has 210 pages. It covers four learning areas of the training programme: 1) Starting and managing a business, 3) Planning and procuring goods and 4) Planning and developing a service programme. According to the foreword, the book is suitable for students who are aiming for the first or extended first school leaving certificates (*Hauptschulabschluss*) after grades nine or ten, for classes with international backgrounds (*Internationale Förderklasse*) and for other types of schools (Huse, 2022). The learning situations in the book deal with content relevant to the learning fields and are intended to teach professional, social and personal competences using text, materials and tasks. The book is about an example company and a trainee gaining their first professional experience, and students are supposed to encounter situations from the everyday life of the company. The preface does not mention linguistic design.

The textbook was not subjected to a complete analysis; after a review, it was decided that each learning area should be examined. The three learning areas mentioned earlier contain two learning situations (LSs) each, and one from each learning area was used for the analysis: LS 1.1, LS 3.1 and LS 4.2. By analysing half the available situations, a good degree of representativeness was achieved. Together, the analysed situations account for about 70 pages of the textbook.

The units of analysis were texts and tasks, and the LSs contain both situation texts and information texts. Situation texts are clearly marked on a blue background with the headings 'Situation' or 'Continuation of the situation', while information texts are on a brown background. All text in the selected LSs was analysed. Tasks in the book are on a yellow background with the headings 'This is for you to do', 'Further tasks' or 'Comprehension questions', and the number of subtasks varies. In the end, 30 texts and 25 tasks were analysed.

3.3 Categories for Analysis

To analyse the selected textbook in a language-sensitive way, a categorisation system was created. Two different but similar coding guidelines were developed for the texts and tasks. The publication Language in Textbooks (*Sprache in Schulbüchern*) by the Austrian Federal Ministry for Education, Arts and Culture (2012) was used as a basis for creating the category system and is itself based on research on German as a second language (Schmölzer-Eibinger & Egger, 2012, p. 39). Its recommendations are presented in

the form of a checklist, and it distinguishes between recommendations for the design of texts and those for the design of tasks, with most recommendations applying to both. It also distinguishes between the word level, sentence level, text level and visual level.

After review, 27 recommendations were selected from the checklist as templates for the categories to be used in this study: 12 for assessing text and 15 for assessing tasks (see Table 1). After making minor changes, each category was phrased as a statement that could be scored on a scale from 0 (not applicable) to 3 (highly applicable). Ideally, a text or task should be awarded 3 points in all categories; if not, revisions in the respective categories would be needed. The original recommendations did not specify how a text or task might be scored; to ensure objective evaluations, criteria were established for awarding points in each category after several test runs. Not all numbers of points could be awarded in all categories; for example, TA1 ('providing all necessary information to solve the task') was scored as either 3 points or 0 points, with intermediate scores not being considered useful.

Table 1 presents an overview of the categories. The labels in the first column summarise the category's level and whether it applies to texts, tasks or both. The levels are represented by the letters W (word), S (sentence), T (text) and V (visual), with X representing texts and A representing tasks.

Table 1: Overview of the categories

Acronym	**Categories for analysis of texts**	**Categories for analysis of tasks**
	Word level	
WXA1	Precision and appropriateness of word usage	
WXA2	Accurate and sufficient explanation of difficult words	
WXA3	Clear differentiation of everyday vocabulary from professional vocabulary	
WXA4	References to functional words that are important for understanding	
WXA5	Appropriate number of newly introduced professional terms	
WXA6	No unnecessary nominalisations	
WA1		Explicit use of operators
	Sentence level	
SXA1	Appropriate complexity of sentence constructions	
SXA2	No unnecessary subordinate sentences	
	Text level	
TXA1	Suitable cohesive agents	
TX1	Gradual introduction of information	
TA1		Providing all necessary information to solve the task
TA2		Clear and logical sequence of work steps

Acronym	Categories for analysis of texts	Categories for analysis of tasks
	Visual level	
VXA1	Visual highlighting of important words and information	
VXA2	Clear differentiation of information and content through paragraphs and bulleted lists	

Table 2 presents, as an example, the scoring criteria for the category 'Precision and appropriateness of word usage' at the word level (WXA1). Implementation of a category of language sensitivity is considered precise and appropriate if it is suitable for the respective age group, topic, problem and context of use (Schmölzer-Eibinger/Egger, 2012, p. 16). In this case, word usage was not appropriate if unknown or little-used terms were not explained or clarified, so the analysis of 'appropriateness' focused on the use of known professional terms. Similar scoring criteria were defined for all categories.

Table 2: Precision and appropriateness of word usage at word level (WXA1)

	Score	Criterion
Precision and appropriateness of word usage at the word level	0 = not applicable	More than one inappropriate word per sentence
	1 = low applicability	More than 0.5 but less than 1.0 inappropriate words per sentence
	2 = moderate applicability	More than 0 but less than 0.5 inappropriate words per sentence
	3 = high applicability	No inappropriate words

Once all the texts and tasks were analysed, the distributions of scores were calculated for each category. The following simplified example can be used to illustrate this:

In category WXA2:

- 20 % of the texts scored 0 points
- 10 % of the texts scored 1 point
- 30 % of the texts scored 2 points
- 40 % of the texts scored 3 points

In this way, it is possible to estimate at which linguistic levels and in which areas the textbook needs to be sensitised. The total number of points in all categories can be calculated for each text or task and expressed as a percentage of the maximum possible to provide a rating of its language sensitivity.

Although four possible scores for each category might suggest four evenly divided ratings of overall language sensitivity, it was ultimately decided that this did not reflect reality and was not face valid. For example, a text or task with only 75 % of the possible total score would not, in reality, be considered to have the highest level of language sensitivity. After many trial calculations, it was decided that a score of 85 % could be considered fully language sensitive. The other ratings, which are not equally distributed, are presented in Table 3[1].

Table 3: Language sensitivity ratings

Language sensitivity rating	Language sensitivity descriptor
0 %–29.99 %	Not language sensitive at all
30 %–59.99 %	Less language sensitive
60 %–84.99 %	More language sensitive
85 %–100 %	Fully language sensitive

These ratings allow statements to be made about the language-sensitive design of the textbook, which can be found in the results section.

4 Results

The results of the textbook analysis are presented below. Each category is analysed separately, and the overall language sensitivity of the texts and tasks are then presented.

4.1 Results at the Word Level

At the word level, there were six categories in which both texts and tasks were analysed and one category for tasks only.

4.1.1 Precision and Appropriateness of Word Usage

In this category, the texts and tasks were analysed according to whether they contained clear, precise word use that was appropriate for the target group and the context. Words were considered inappropriate only in the texts or tasks in which they appeared for the first time in the book and were not explained (see Table 4).

1 It was difficult to define the boundaries for the language sensitivity ratings because there was no information in the literature searched. The limits of lowest and highest ratings were simpler because the former naturally starts at 0% and the latter ends at 100%, but the intermediate limits proved problematic.

Table 4: Frequency distribution for the category 'precision and appropriateness of word usage'

Precision and appropriateness of word usage	Text frequency		Task frequency	
	Absolute	%	Absolute	%
0 = not applicable	0	0.00 %	0	0.00 %
1 = low applicability	1	3.33 %	3	12.00 %
2 = moderate applicability	22	73.33 %	5	20.00 %
3 = high applicability	7	23.33 %	17	68.00 %
Total	30	100.00 %	25	100.00 %

Almost one in four of the texts analysed (23.33 %) scored 3 points – these texts contain no inappropriate words and can be described as fully language sensitive in terms of appropriate word use. Most of the texts (73.33 %) scored 2 points, with an average of no more than 0.5 inappropriate words per sentence, and can be described as more language sensitive. Only one text scored 1 point, with an average between 0.5 and 1.0 inappropriate words per sentence and can be described as less language sensitive. None of the analysed texts scored 0 points.

Similarly, none of the tasks scored 0 points, meaning that none contained more than three inappropriate words. Three items (12 %) scored 1 point and contained 2–3 inappropriate words; five (20 %) scored 2 points and contained one inappropriate word, but most – 17 (68 %) – scored 3 points, with no inappropriate words.

In this category, almost all the texts and tasks scored at least 2 points and can therefore be described as more language sensitive. Furthermore, while about 75 % of the texts scored 2 points, about 70 % of the tasks scored 3 points.

4.1.2 Accurate and Sufficient Explanation of Difficult Words

In this category, difficult words were foreign words, technical terms or complex compounds (two or more words are connected to a new word in order express a new meaning) that were newly introduced. Here, too, the target audience and context of use were considered when deciding whether a word was 'difficult'.

Table 5: Frequency distribution for the category 'accurate and sufficient explanation of difficult words'.

Accurate and sufficient explanation of difficult words	Text frequency		Task frequency	
	Absolute	%	Absolute	%
0 = not applicable	6	20.00 %	3	12.00 %
1 = low applicability	3	10.00 %	2	8.00 %
2 = moderate applicability	9	30.00 %	2	8.00 %
3 = high applicability	12	40.00 %	18	72.00 %
Total	30	100.00 %	25	100.00 %

The analysis showed that 20 % of the texts in this category were not language sensitive (0 points), i.e., none of the difficult words were explained; 10 % of the texts scored 1 point, with less than half of the difficult words explained; 30 % scored 2 points, with more than half of the difficult words explained but at least one not; and 40 % of the texts were fully language sensitive, with all difficult words appearing for the first time being explained.

For the tasks, most (72 %) scored 3 points, 8 % each scored 1 and 2 points, and 12 % scored 0 points, using the same criteria as for the texts. One reason for the majority of tasks scoring full marks could be that the tasks usually process information already introduced in the texts, so technical terms already clarified did not need to be explained. In this category, most of the texts (70 %) and tasks (80 %) received the two highest scores.

4.1.3 Clear Differentiation of Everyday Vocabulary from Professional Vocabulary

In this category, the texts and tasks were searched for terms that have different meanings in professional language than in everyday language, e.g., in German, the professional word for 'capital allowance' (*Abschreibung*) means 'copying out' in everyday language. The key factor was whether the meanings of terms with the potential for confusion were explicitly stated (see Table 6).

Table 6: Frequency distribution of the category 'clear differentiation of everyday vocabulary from professional vocabulary'

Clear differentiation of everyday vocabulary from professional vocabulary	Text frequency		Task frequency	
	Absolute	%	Absolute	%
0 = not applicable	10	33.33 %	1	4.00 %
1 = low applicability	0	0.00 %	0	0.00 %
2 = moderate applicability	1	3.33 %	0	0.00 %
3 = high applicability	19	63.33 %	24	96.00 %
Total	30	100.00 %	25	100.00 %

A third of the texts analysed (33.33 %) scored 0 points and failed to explain ambiguous terms. None of the texts scored 1 point; only one scored 2 points, with most – but not all – potentially confusing terms being explained; and the remainder (63.33 %) scored 3 points, with all necessary technical terms being differentiated. Both the infrequency of such terms and the presence of a glossary with their meanings may have accounted for the majority receiving full points.

For the tasks, only one received 0 points, none scored 1 or 2 points, and almost all (96 %) scored 3 points, with no unexplained ambiguous terms.

4.1.4 References to Functional Words That are Important for Understanding

In this category, clues that draw attention to functional words were analysed. Such words do not convey specific content but make connections between elements of a sentence to help in understanding a problem; they include conjunctions, prepositions and adverbs. Possible clues to these function words could be emphases, explanations or pictures.

Table 7: Frequency distribution in the category 'references to functional words that are important for understanding'

References to functional words that are important for understanding	**Text frequency**		**Task frequency**	
	Absolute	%	Absolute	%
0 = not applicable	30	100.00 %	25	100.00 %
1 = low applicability	0	0.00 %	0	0.00 %
2 = moderate applicability	0	0.00 %	0	0.00 %
3 = high applicability	0	0.00 %	0	0.00 %
Total	30	100.00 %	25	100.00 %

All the texts and tasks scored 0 points. There were no references to functional words in the textbook whatsoever; no bold or coloured print, underlining or other highlighting was used to indicate important functional words, and although there was a lot of highlighting in the book, it was used for substantive terms and not for conjunctions or prepositions. As there were no references to functional words in the book, it was clear that no consideration had been given to whether particular texts or tasks needed them.

4.1.5 Appropriate Number of Newly Introduced Professional Terms

Comprehension problems can be caused by introducing too many new professional terms too quickly, so these should be introduced in a targeted and measured way. In this category, the texts and tasks were analysed for newly introduced and unknown technical terms and foreign words. Previous chapters and pages were reviewed to determine whether a term had already been introduced (see Table 8).

Table 8: Frequency distribution in the category 'appropriate number of newly introduced professional terms'

Appropriate number of newly introduced professional terms	Text frequency		Task frequency	
	Absolute	%	Absolute	%
0 = not applicable	8	26.67 %	0	0.00 %
1 = low applicability	5	16.67 %	0	0.00 %
2 = moderate applicability	5	16.67 %	0	0.00 %
3 = high applicability	12	40.00 %	25	100.00 %
Total	30	100.00 %	25	100.00 %

The texts were relatively evenly distributed: 40 % scored 3 points, containing a maximum of two new technical/foreign words; approximately 17 % scored 2 points, with three new technical/foreign words; and the same number scored 1 point, containing four new professional terms. More than a quarter of the texts scored 0 points, with more than four new technical/foreign words.

All the tasks scored 3 points as none contained a subtask with more than one new technical term. Thus, while some of the texts needed improvements in language sensitivity, all the tasks already received the highest scores. An important reason for this is that most of the technical terms addressed in the tasks were already introduced in the texts so that the reader would be familiar with them before starting the tasks.

4.1.6 No Unnecessary Nominalisations

Nominalisations can be unnecessary or superfluous when presenting a context and can make it difficult to understand a task or text. This analysis was more difficult because there are no conventional criteria for objectively rating whether a nominalisation is unnecessary. The coding was thus not strict, and nominalisations were often judged as 'not unnecessary' provided there were not several in a row or in a sentence. Attention was paid to whether a nominalisation could cause confusion for a linguistically weak student, although this was itself somewhat subjective (see Table 9).

Table 9: Frequency distribution in the category 'no unnecessary nominalisations'

No unnecessary nominalisations	Text frequency		Task frequency	
	Absolute	%	Absolute	%
0 = not applicable	0	0.00 %	0	0.00 %
1 = low applicability	0	0.00 %	0	0.00 %
2 = moderate applicability	13	43.33 %	4	16.00 %
3 = high applicability	17	56.67 %	21	84.00 %
Total	30	100.00 %	25	100.00 %

The texts were almost evenly distributed between the top two scores, with slightly more than half (56.67 %) scoring 3 points, containing no nominalisations that were considered unnecessary. The remainder (43.33 %) scored 2 points, containing on average no more than one unnecessary nominalisation per sentence.

The tasks were also distributed between the two top scores: 16 % scored 2 points, with at least one subtask containing 1–2 unnecessary nominalisations, but the vast majority (84 %) scored 3 points, with no unnecessary nominalisations. The frequency distributions suggest that the criteria used for the category were inadequately rigorous, given how few nominalisations were considered unnecessary.

4.1.7 Explicit Use of Operators

In this category, only the tasks were analysed to determine whether all the operators in the action prompts were explicitly mentioned. In addition to classical operators, such as 'explain', 'present' and 'calculate', clear W-questions (e.g., 'What do you mean by …?') were also considered explicit clarification if the question clearly explained to the reader what should be done. For example, the question 'What do you mean by a range extension?' would most likely prompt the student to give a description.

Table 10: Frequency distribution in the category 'explicit use of operators'

Explicit use of operators	**Task frequency**	
	Absolute	%
0 = not applicable	1	4.00 %
1 = low applicability	0	0.00 %
2 = moderate applicability	2	8.00 %
3 = high applicability	22	88.00 %
Total	30	100.00 %

Operators such as 'read', 'describe', 'compare' and 'discuss' could be found throughout the textbook, and most of the tasks explicitly stated all required actions, with 88 % scoring 3 points. Two tasks (8 %) scored 2 points because they did not explicitly mention all calls to action. Only one task scored 0 points, but, with few exceptions, the textbook used explicit operators or calls to action.

4.2 Results at the Sentence Level

The results at sentence level all applied to both texts and tasks.

4.2.1 Appropriate Complexity of Sentence Construction

Complex sentences can be created by, for example, inserting partial sentences or by the frequent use of parenthetical expressions. This category focused on insertions, which are

parenthetical expressions or sentences between dashes that are not necessary for correct sentence structure (see Table 11).

Table 11: Frequency distribution in the category 'appropriate complexity of sentence construction'

Appropriate complexity of sentence construction	Text frequency		Task frequency	
	Absolute	%	Absolute	%
0 = not applicable	0	0.00 %	0	0.00 %
1 = low applicability	2	6.67 %	0	0.00 %
2 = moderate applicability	1	3.33 %	0	0.00 %
3 = high applicability	27	90.00 %	25	100.00 %
Total	30	100.00 %	25	100.00 %

Most of the texts (90 %) scored 3 points, with a complexity appropriate for the target group – that is, containing a maximum of 0.5 insertions per sentence. Only one text (3.33 %) scored 2 points, with an average of more than 0.5 but no more than 0.75 insertions per sentence, and two (6.67 %) scored 1 point, containing more than 0.75 and no more than one insertion per sentence. No texts scored 0 points, with more than one insertion per sentence on average.

The tasks all had a complexity of sentence construction entirely appropriate for the target group. No tasks were identified that had a subtask (or introductory text, if applicable) with more than two insertions. Overall, the textbook used insertions (parenthetical expressions and phrases between dashes) in a targeted and measured way.

4.2.2 No Unnecessary Subordinate Sentences

Subordinate sentences should be used sparingly, as their overuse can cause comprehension problems. Examples of commonly used subordinate sentences are relative sentences, conditional sentences and concessive sentences (see Table 12).

Table 12: Frequency distribution in the category 'no unnecessary subordinate sentences'

No unnecessary subordinate sentences	Text frequency		Task frequency	
	Absolute	%	Absolute	%
0 = not applicable	2	6.67 %	0	0.00 %
1 = low applicability	5	16.67 %	0	0.00 %
2 = moderate applicability	13	43.33 %	0	0.00 %
3 = high applicability	10	33.33 %	25	100.00 %
Total	30	100.00 %	25	100.00 %

The texts were distributed between the four possible scores. A third (33.33 %) scored 3 points, with no more than 0.33 subordinate sentences per sentence on average; 43.33 % scored 2 points, with more than 0.33 but no more than 0.66 subordinate sentences per sentence; five texts (16.67 %) scored 1 point, with more than 0.66 but no more than one subordinate sentence per sentence; and two texts (6.67 %) scored 0 points, with more than one subordinate sentence per sentence. Nevertheless, the majority (about 77 %) received the two highest scores and were therefore at least fairly language sensitive.

All the tasks were scored 3 points; they were all fully language sensitive and avoided the overuse of subordinate sentences, with no tasks containing a subtask (or introductory text) with more than two subordinate sentences.

4.3 Results at the Text Level

At the text level, there was one category for both texts and tasks, two for tasks only and one for texts only.

4.3.1 Suitable Cohesive Agents

Cohesive devices are linguistic tools used to link texts and establish contextual links within a text. The analysis focused on proforms, recurrences, substitutions and connectives and found that they were very common and easy to use. The evaluation itself was not strict and depended only on whether the connection between the sentences, paragraphs or subtasks was obvious. For each text or task, the total number of cohesive devices was divided by the number of sentences or subtasks. As mentioned, cohesive devices are very common, so almost all the texts and tasks scored 3 points (see Table 13).

Table 13: Frequency distribution in the category 'suitable cohesive agents'

Suitable cohesive agents	**Text frequency**		**Task frequency**	
	Absolute	%	Absolute	%
0 = not applicable	0	0.00 %	0	0.00 %
1 = low applicability	0	0.00 %	0	0.00 %
2 = moderate applicability	0	0.00 %	1	4.00 %
3 = high applicability	30	100.00 %	24	96.00 %
Total	30	100.00 %	25	100.00 %

One task scored 2 points, with an average of less than one but at least 0.5 suitable cohesive devices per subtask. All other tasks (96 %) contained, on average, at least one suitable cohesive device per subtask. Overall, in terms of suitable cohesive devices, the textbook can be described as fully language sensitive.

4.3.2 Gradual Introduction of Information

Only texts were analysed to determine whether they introduced too much new information at one time or whether it was introduced gradually. The criteria for the scores were defined in detail, and the assessment of 'new information' was comparatively strict. Where appropriate, unimportant statements were also considered new information because they can also cause confusion (see Table 14).

Table 14: Frequency distribution of the category 'gradual introduction of information'

Gradual introduction of information	**Text frequency**	
	Absolute	%
0 = not applicable	8	26.67 %
1 = low applicability	2	6.67 %
2 = moderate applicability	1	3.33 %
3 = high applicability	19	63.33 %
Total	30	100.00 %

Nearly two-thirds of the texts (63.33 %) scored 3 points, either introducing a maximum of one new piece of information in each sentence or containing a maximum of five sentences with two new pieces of information. Only one text scored 2 points, containing one sentence with three new pieces of information. Two texts (6.67 %) scored 1 point – one containing more than eight sentences with two new pieces of information and the other having one sentence with four new pieces of information. Just over a quarter of the texts (26.67 %) scored 0 points, containing either more than one sentence with at least three new pieces of information or at least one sentence with more than four new pieces of information.

Whether or when a particular piece of information should be considered new and independent is partly subjective, so it was decided that a strict approach should be taken because even statements that eventually turn out to be irrelevant can cause confusion for students with language difficulties. It should be noted that a third of the texts received the lowest two scores.

4.3.3 Providing all Necessary Information to Solve the Task

Only tasks were analysed in this category, in which it was determined whether all the important information, tools and references to materials needed to complete the task were included. It was also decided that this category would have only two possible scores. Although intermediate scores could, with some complexity, be conceptualised, they would not necessarily be useful because the category refers to 'completeness', offering two obvious options: 'complete' or 'not complete' (see Table 15).

Table 15: Frequency distribution in the category 'providing all necessary information to solve the task'

Providing all necessary information to solve the task	Task Frequency	
	absolute	%
0 = not applicable	7	28.00 %
1 = low applicability	0	0.00 %
2 = moderate applicability	0	0.00 %
3 = high applicability	18	72.00 %
Total	25	100.00 %

Most of the tasks (72 %) provided all the important information and hints for solving the task, but 28 % did not and therefore scored 0 points.

4.3.4 Clear and Logical Sequence of Work Steps

The steps of a task should be listed in a sensible and understandable order to avoid ambiguity and excessive demands when working on a task. In this category, only tasks were analysed, and again, it was considered sufficient to use only two scores.

Table 16: Frequency distribution in the category 'clear and logical sequence of work steps'

Clear and logical sequence of work steps	Task frequency	
	Absolute	%
0 = not applicable	0	0.00 %
1 = low applicability	0	0.00 %
2 = moderate applicability	0	0.00 %
3 = high applicability	25	100.00 %
Total	25	100.00 %

All the tasks specified work steps in a meaningful and comprehensible order, which was usually done by numbering the steps. There were also cases in which a single subtask was given, with its relevant information, immediately followed by a processing field. The next subtask would then be given with its associated information and processing field. Tasks with only one step also scored 3 points in this category.

4.4 Results at the Visual Level

At the visual level, there were two categories in which both texts and tasks were analysed.

4.4.1 Visual Highlighting of Important Words and Information

This category looked for visual highlights of important words and information, focusing on headings, note boxes and bold and coloured fonts (see Table 17).

Table 17: Frequency distribution of the category 'visual highlighting of important words and information'

Visual highlighting of important words and information	**Text frequency**		**Task frequency**	
	Absolute	%	Absolute	%
0 = not applicable	2	6.67 %	5	20.00 %
1 = low applicability	4	13.33 %	1	4.00 %
2 = moderate applicability	5	16.67 %	4	16.00 %
3 = high applicability	19	63.33 %	15	60.00 %
Total	30	100.00 %	25	100.00 %

Of the texts, 63.33 % contained, on average, at least one visual highlight per paragraph and scored 3 points; 16.67 % contained at least 0.5 but less than one highlight per paragraph and scored 2 points; and 13.33 % had between 0 and 0.5 highlights per paragraph and scored 1 point. Only two texts scored 0 points and contained no visual highlighting.

Of the tasks, 60 % scored 3 points and contained at least one visual highlight per subtask, and 16 % scored 2 points, with an average of at least 0.5 but less than one highlight per subtask. Only one item scored 1 point, with an average of less than 0.5 highlights per subtask, and 20 % of the tasks scored 0 points, containing no visual highlights.

The textbook was relatively good in its visual highlighting. The majority of the texts (80 %) and tasks (76 %) scored at least 2 points, with 63 % of the texts and 60 % of the tasks scoring 3, which can be considered fully language sensitive in this category.

4.4.2 Clear Differentiation of Information and Content Through Paragraphs and Bulleted Lists

To avoid confusion, excessive demands and demotivation, unrelated content in texts or tasks should be kept clearly separate and related content should be clearly labelled. This analysis looked at whether paragraphs and bulleted lists were used, with no particular attention paid to the number of paragraphs. Only three score criteria were defined because a fourth would not be meaningful, as is explained below (see Table 18).

Table 18: Frequency distribution in the category 'clear differentiation of information and content through paragraphs and bulleted lists'

Clear differentiation of information and content through paragraphs and bulleted lists	Text frequency		Task frequency	
	Absolute	%	Absolute	%
0 = not applicable	1	3.33 %	0	0.00 %
1 = low applicability	0	0.00 %	0	0.00 %
2 = moderate applicability	2	6.67 %	0	0.00 %
3 = high applicability	27	90.00 %	25	100.00 %
Total	30	100.00 %	25	100.00 %

One text was identified that used neither paragraphs nor bulleted lists, although at least one opportunity to do so was identified, and this text scored 0 points. Two texts (6.67 %) scored 2 points and used paragraphs only, although a list of some of the information would have been possible and appropriate. Most of the texts (90 %) scored 3 points; these offered all possible and appropriate methods of visual delimitation, whether that be both, one or neither in each case.

All the tasks analysed scored 3 points using the same criteria as for the texts. Thus, with few exceptions, all texts and tasks used paragraphs and bullets to clearly differentiate content.

4.5 Language Sensitivity of the Texts and Tasks

The extent to which language-sensitive design was achieved in each text or task is shown in Table 19. First, the total number of points a task or text scored in all categories was calculated and then divided by the total number of points possible – 36 for texts (12 categories × 3 points) and 45 for tasks (15 categories × 3 points). This score was then used to determine the language sensitivity rating of the task or text using the scoring key.

None of the analysed texts were at the lowest rating (see Table 19), with a language sensitivity of less than 30 % or 'not at all language sensitive'. Two texts (6.67 %) can be described as 'less language sensitive', with language sensitivity ratings of 50 % and 58 %. Most of the texts (25; 83.33 %) achieved the third rating – 'more language sensitive' – with scores ranging between 60 % and 84.99 %, and only three (10 %) were rated 'fully language sensitive', with scores of 86 %, 89 % and 92 %.

None of the tasks received the lowest two ratings, meaning that everyone had a language sensitivity score of at least 60 %. Of these, 40 % reached the third language sensitivity rating, with scores between 60 % and 84.99 %, and can be described as 'more language sensitive'. The majority of tasks can be described as 'fully language sensitive', with 15 (60 %) having a score of at least 85 %, including four that exceeded 90 %.

Table 19: Distribution of the texts and tasks across the language sensitivity ratings

Language sensitivity rating	Text frequency		Task frequency	
	Absolute	%	Absolute	%
Not at all language sensitive	0	0.00 %	0	0.00 %
Less language sensitive	2	6.67 %	0	0.00 %
More language sensitive	25	83.33 %	10	40.00 %
Fully language sensitive	3	10.00 %	15	60.00 %
Total	30	100.00 %	25	100.00 %

5 Discussion and Conclusion

The majority of the texts and tasks in most of the categories were distributed between the top two scores and tended to have at least some language-sensitive characteristics. However, by looking at the individual categories, one can determine the language levels and categories for which the textbook still needs to be sensitised.

At the word level, two categories stand out with significant deficiencies. For 'accurate and sufficient explanation of difficult words' and 'references to important function words', revisions are needed to both texts and tasks; a significant number of texts were also found to need improvement in the categories 'clear distinction between everyday and technical vocabulary' and 'appropriate number of newly introduced technical terms'.

At the sentence level, the textbook shows linguistic weaknesses in only one category: about a quarter of the texts used subordinate sentences too often. At the text level, a third of the texts should be revised because they introduce too much new information too quickly, and a third of the tasks also deserve revision because they do not provide all the information needed to solve the task. Finally, at the visual level, in some texts and tasks, important words and information are given little or no visual emphasis, such as bold print or reminder boxes.

Overall, none of the tasks and only two of the texts were 'less language-sensitive', with none of the texts or tasks considered 'not at all language-sensitive'. The vast majority of the texts were 'more language sensitive' (83 %), and all the tasks were either 'more' (40 %) or 'fully' language sensitive (60 %). Based on the analysis of the sample, the textbook as a whole can therefore be considered 'more language sensitive'.

Of course, a single textbook analysis does not cover the language sensitivity of the entire vocational school programme nor that of the vocational school format and certainly not the school system as a whole. Furthermore, there are methodological limitations to the analysis. For example, the categories selected do not cover all dimensions and definitions of language sensitivity. Because the textbook is in German, it does not make sense to show text excerpts in this paper to explain the analysis, which represents a weakness in replicability. Nevertheless, this work contributes to language-sensitive textbook analyses and can offer a first point of reference for future analyses and comparisons between textbooks.

The language-sensitivity analysis of one textbook also cannot fully address criticisms of the comprehensibility of German textbooks made by textbook researchers (Schmölzer-Eibinger & Egger, 2012). Textbooks are always written for specific target groups at a specific stage of their education, so differentiation of language sensitivity is also necessary.

Textbooks are a didactic medium and fulfil pedagogical-didactic, social and political functions (Wiater, 2003), which language-sensitive design can support. Pedagogical-didactic functions are those that help and facilitate school learning processes; textbooks can thus represent, structure and control school knowledge in the form of a systematic overview (Wiater, 2003), and by consciously designing textbooks in a language-sensitive way, the internal differentiation of school learning processes can be supported, relieving the burden on teachers. Language is then no longer an obstacle to the transfer of information but rather an aid to learning, and the textbook, as an interpretation of the curriculum and an instrument of curricular control, can take on the task of language promotion and the implicit and explicit language requirements of the curriculum (Vera, 2018).

Social functions, meanwhile, include ensuring equal opportunities in the education system and ensuring basic knowledge and skills in society (Wiater, 2003). Language-sensitive design also considers the linguistic diversity of learners and reduces the information barrier to learning, further supporting equal opportunities in education and sending a political signal that the state values an inclusive society.

The practical implication of this study is that the quality assurance of textbooks should include greater consideration of the heterogeneous backgrounds of the student body (Oleschko & Moraitis, 2012), and, if necessary, language-sensitive quality indicators should be included in the approval process. As textbooks are written for specific groups at a specific stage of education and for a specific subject, the language levels of the target group and its diversity should be taken into account.

Finally, it should be remembered that language sensitivity is not the only quality feature of a 'good' textbook. During the search for a suitable book for the analysis, some teachers stated that they used textbooks only partially, extracting certain texts, graphics or illustrations. Thus, if a textbook is not effective in its didactics and methodology, it will be little used, and no amount of language-sensitive design would benefit students with weak language skills. Linguistic and didactic factors also go hand in hand: a language-sensitive textbook alone is not enough for teaching to be sensitive to language; the instructional design of a lesson also depends on the language sensitivity of the teacher.

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