A German-Chinese e-Dictionary of Manufacturing Technology in the Automotive Industry: The survey analysis of user needs

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Chenlu Yu és doctoranda a l'Institut de Lingüística Aplicada (IULA) de la Universitat Pompeu Fabra. Té un màster europeu en Lexicografia i experiència laboral en la indústria de l'automoció, la qual cosa l'ha motivada a explorar la lexicografia especialitzada bilingüe en aquest àmbit. La seva recerca se centra en el desenvolupament d'un diccionari especialitzat alemany-xinès en el camp de l'automoció, basat en la teoria comunicativa de la terminologia (TCT).

Abstract

This paper presents the analysis of user needs and lexical usage as a preliminary study of the German-Chinese Bilingual Dictionary of Manufacturing Technology in the Automotive Industry (hereinafter: GCMA dictionary project). The project aims to develop a bilingual dictionary to facilitate specialized communication within the automotive industry, targeting Chinese engineers, students, and interpreters. The research is based on data from an online questionnaire designed for potential dictionary users. As a pilot study, it explores the usage scenarios, identifies user profiles and preferences, and evaluates existing German-Chinese dictionaries in terms of their function and microstructure. The insights from this questionnaire provide valuable guidance for the design of dictionary entries and the development of lexicographical data.
KEYWORDS: *dictionary use; user needs; specialized dictionary; terminology; automotive Industry*

Resum

Diccionari electrònic alemany-xinès de tecnologia de fabricació en la indústria de l'automòbil: anàlisi de l'enquesta sobre les necessitats dels usuaris

Aquest article presenta l'anàlisi de les necessitats dels usuaris i de l'ús lèxic com a estudi preliminar del German-Chinese Bilingual Dictionary of Manufacturing Technology in the Automotive Industry *(en endavant, projecte de diccionari GCMA). L'objectiu del projecte és desenvolupar un diccionari bilingüe per facilitar la comunicació especialitzada dins de la indústria de l'automòbil, destinat a enginyers, estudiants i intèrprets xinesos. La investigació es basa en dades recollides mitjançant un qüestionari en línia dirigit a possibles usuaris del diccionari. Com a estudi pilot, s'exploren els escenaris d'ús, s'identifiquen els perfils i les preferències dels usuaris, i s'avaluen els diccionaris alemany-xinès existents en termes de la seva funció i microestructura. Les conclusions d'aquest qüestionari proporcionen orientació valuosa per al disseny de les entrades del diccionari i per al desenvolupament de dades lexicogràfiques.*
PARAULES CLAU: *ús dels diccionaris; necessitats dels usuaris; diccionari especialitzat; terminologia; indústria de l'automoció*

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1 Introduction

With the globalization of the automotive manufacturing industry, German original equipment manufacturers (OEMs) and automotive suppliers have established overseas offices and production bases in China. Consequently, the mobility of automotive manufacturing lines and talents within the global market became more intensive. Statistics show that Germany is rapidly becoming a top destination for Chinese students pursuing degrees in technology and engineering. Since the launch of *Made in China 2025*, automotive manufacturers are increasingly required to allocate resources globally to expand their markets (Han, 2024). As a result, the demand for skilled employees, students, and translators with deep expertise and bilingual language proficiency has grown significantly. In this context, a high-quality German-Chinese automotive manufacturing dictionary is indispensable. Its target users range from engineers related to the automotive industry to employees, students, and other people interested in this field.

Dictionary users have varying needs when consulting dictionaries, and those needs are naturally dependent on personal preferences, but also, or perhaps primarily, on the specific task in which dictionary users happen to be involved and the circumstances of consultation (Lew, 2010, p. 291).

As Lew pointed out, understanding user needs is crucial before compiling dictionaries. For instance, engineers often work in specialized communicative contexts where they need to interpret German technical drawings and documents or correspond with German counterparts via email. In such scenarios, access to accurate equivalent terms and contextual information is essential for ensuring precise understanding and effective communication. For professional translators, challenges such as being unfamiliar with terminological units, the interlinguistic correspondence between terms and equivalents (Cabré, Estopá, Freixa, Lorente, & Tebé, 2002, p. 168–169), and the lack of reliable terminological resources make it imperative to develop the ability to recognize specialized concepts and clarify the relationships between terms in professional translation tasks (Faber & León-Araúz, 2021). The abovementioned scenarios highlight the strong connection between terminology and multiple disciplines, including linguistics, information science, and computational linguistics, underlining its multidisciplinary nature (cf. Sager, 1990; Cabré, 2023). Consequently, three key features—linguistic, socio-communicative, and cognitive (cf. Cabré, 1999; Cabré, 2003; Cabré & Lorente, 2021)—are essential for fostering effective communication within the automotive manufacturing industry.

Since the dictionary is continually being developed, creating user profiles that satisfy user-defined requirements and expectations is very crucial. Bergenholtz and Tarp (2010) emphasize that the primary goal of any lexicographic or terminological product should be to address the users' needs. Therefore, at the initial stage of the GCMA project, it is necessary to analyze a representative sample of potential users.

This study focuses on addressing two questions.

1. What are the profiles of the GCMA dictionary's target user groups? Specifically, what are users' levels of German language proficiency and professional knowledge, their ability to apply language skills in specialized communication, and their requirements for dictionary usage?
2. What insights may be gathered for the GCMA dictionary compilation by analyzing the dictionaries currently available in the Chinese market? In particular, are there any aspects of entry and function design that need to be considered?

To gain a better understanding of the intended main user groups' current habits and needs, as well as hypothetical usage situations, we would first reconstruct and analyze users' characteristics, expertise in the automotive industry, language proficiency, and dictionary use preferences. To that purpose, we designed a questionnaire as the primary research method for this study (Section 2).

The core of this work focuses on the following aspects (Section 3):

1) The personal information of intended user groups, including their background in learning German and their expertise in the automotive field.
2) Users' preferences and attitudes toward lexicographical online resources, lexical online tools, and the various usage situations they encountered.
3) Tasks involving the description of German and Chinese concepts and evaluation of entries from two prominent German-Chinese online dictionaries.

The findings of this study will not only provide valuable input for the future design of the German-Chinese specialized dictionary in the automotive industry but also provide recommendations for the development of other specialized dictionaries, with additional reflections from a communicative perspective (Section 4).

2 Methodology

According to Wiegand (1998), dictionary research is one of the most crucial elements of meta-lexicography. It is classified into four categories: "historical dictionary research, critical dictionary research, dictionary usage research, and systematic dictionary research" (Wiegand, 1988, p. 6). The study of dictionary usage has contributed to understanding lexicographical functions and has played a vital role in developing specialized dictionaries. According to Bergenholz

and Tarp (2002; 2010), a dictionary is developed as a reference work to solve the specific problems that a given sort of user may confront in a specific context while also meeting the specific needs of dictionary users. In this context, a critical prerequisite for developing a dictionary prototype is the analysis of user types and their needs during the preparation stage. User-oriented functional research, which serves as the cornerstone for dictionary design, determines lexicographical data and priorities. Additionally, this approach allows for the customization of the user experience based on individual needs, circumstances, and professional backgrounds, ultimately enhancing the quality and usability of the dictionary and increasing its competitiveness in the market.

Surveys are the most often used tool in social research (Müller-Spitzer, 2014), so we decided to proceed with our study using a questionnaire. The research questionnaire is divided into three parts. The first part collects general information such as user types, occupations, and methods of learning German. The second part focuses on the specifics of dictionary usage, asking intended target users about their preferred lexicographic reference tools and the reasons for their choices when dealing with specialized terminology in text comprehension, production, and translation. The third part comprises two tasks: 1) Identify the German and Chinese concepts based on a collection of figures from the vehicle production process. 2) Evaluate the advantages and drawbacks of the lexicographic information and microstructure of two widely used online German-Chinese dictionaries by reviewing individual entries.

The survey was available from July to August 2024 and included a mix of open-ended questions, multiple-choice questions, and "yes/no" questions. To facilitate responses from native Chinese speakers, the questionnaire was translated into Chinese. The questionnaire was conducted using the WJX[1] platform, which streamlined data collection and administration.

3 Results and analysis

Before proceeding with the analysis of the specific questions, we summarized some basic information about the respondents. We started the questionnaire by collecting background data on the respondents and grouping them into pertinent categories because the GCMA dictionary project's target users include Chinese engineers, students, translators, interpreters, and other people with an interest in the automotive sector. A total of 160 valid responses were gathered. The survey's main findings will be presented and discussed in this section. Based on the research questions presented in Section 1, the analysis is divided into three related sections using the methodology described in Section 2.

3.1 Respondents background and personal information

In terms of respondent distribution, engineers and technicians made up a significant proportion, accounting for nearly half of all participants (73). Similarly, the number of translators and students in the automotive manufacturing field was comparable, with 46 translators and 39 students, respectively.

The distribution of engineers and technicians across the three main sectors of automotive manufacturing—Original Equipment Manufacturers (OEMs), Automotive Parts Suppliers (APSs), and New Energy Vehicles (NEVs)—was relatively balanced, representing 39.73%, 28.77%, and 30.14% of the total, respectively (Figure 1).

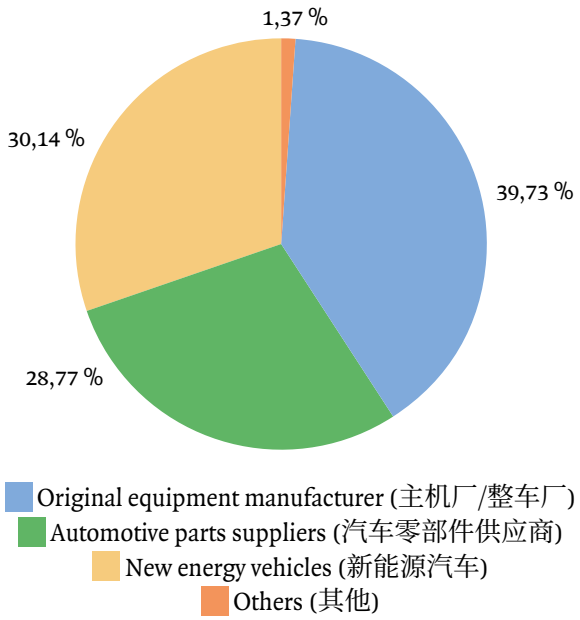


FIGURE 1. Distribution of engineers and technicians in the automotive manufacturing industry

As shown in Figure 2, most students were enrolled in mechanical engineering (40.18%), electrical engineering (31.25%), or vehicle engineering (26.79%). This suggests that, beyond vehicle engineering, students from traditional engineering disciplines such as mechanical engineering and electrical automation are also likely to pursue careers in the automotive manufacturing industry.

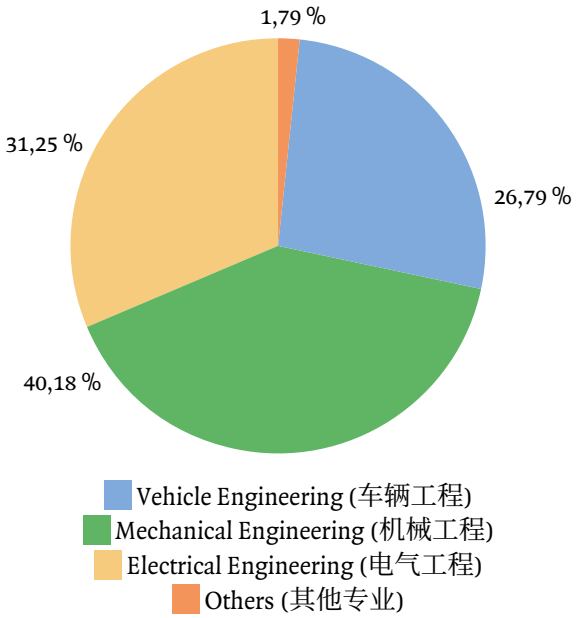


FIGURE 2. Distribution of students in majors

The analysis of respondents' translation tasks revealed that translating production data, documents, drawings, and other technical materials from Chinese to German was identified as the most important task in their daily work, with 95 mentions. Similarly, translating these materials from German to Chinese was selected 71 times. Additionally, providing on-site interpretation support for production improvement, equipment installation, and other related tasks was highlighted as a key responsibility, with 60 mentions.

155 out of 160 respondents reported having visited Germany, primarily for training purposes. Furthermore, technical assistance and traveling were the reasons why the respondents went to Germany. For German learning, 94 of the 160 respondents are presently enrolled in German courses. Of them, 19 have studied for more than three years, 47 for one to three years, and 28 for less than a year. Regarding self-assessed expertise and skills in the automotive field, 10.63% of respondents described themselves as unfamiliar with specialized knowledge and could be considered "laypersons." Approximately 45% had studied or attended relevant courses or received professional training in the field, and 31.88% were highly knowledgeable about automotive manufacturing. These two groups can be categorized as "semi-experts." Meanwhile, 12.5% of respondents identified as experts, possessing exceptional specialized knowledge and the ability to train others.

Based on the respondents' background information and self-assessments, it was evident that their profiles are diverse, encompassing varying levels of specialized knowledge. Notably, most respondents reported speaking German at an elementary level. Two key aspects stand out. First, translating technical documents and files from Chinese into German occurs more frequently than the reverse. From a lexicographic perspective, this emphasizes the translators' requirements for precise equivalents and underlines the importance of including Chinese terminology as headwords in the dictionary. Second, 76.88% of respondents were categorized as semi-experts, which aligns with the idea that specialized dictionaries are typically designed as reference tools for experts, laypeople, and learners within a specific field, focusing on domain-specific terminology (Schierholz, 2003; 2014; Gouws, 2020). For these semi-experts, the dictionary serves a dual purpose: as a resource for acquiring knowledge about automotive manufacturing and for facilitating communication in German-speaking contexts. This is particularly relevant given that only 20% of respondents have studied German for more than three years.

3.2 Specialized dictionary use

Following the classification proposed by Bergenholz and Tarp (2010), dictionary usage was categorized into three primary scenarios: reading documents and information, writing specific texts and documents, and translating. This section examines how dictionaries are utilized in each of these contexts.

In terms of dictionary usage, respondents indicated that they frequently look up the meanings of specific German terms when translating and often check collocations when writing technical texts in most cases (68.75%). Additionally, over 61% reported consulting dictionaries to clarify term definitions for better understanding and communication during workshops or lectures. However, fewer than half of the respondents (46.88%) use specialized dictionaries when reading technical documents. This suggests that while respondents are more likely to rely on specialized dictionaries for writing and translating technical texts, nearly half do not prioritize their use for text comprehension. When asked how they handle German terminology while reading documents or other materials, just 22.5% reported consulting a German-Chinese dictionary, and 18.13% referred to an online encyclopedia.

The results of using German-Chinese specialized dictionaries or other lexicographic resources to write text or documents are then analyzed. 98 percent of respondents prefer to use specialized dictionaries or other lexicographic tools while producing content. As indicated in Figure 3, we identified which dictionaries or reference sources respondents used the most when generating content.

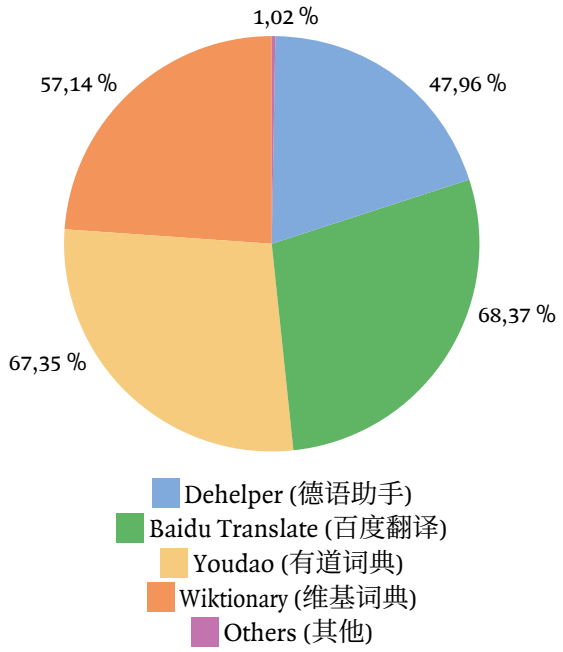


FIGURE 3. Types of dictionaries most used by the respondents

The most often used resources were the Youdao Dictionary and Baidu Translate, which were cited 67 and 66 times, respectively, as shown in Figure 3. Wiktionary was the next most popular resource (with 56 mentions), followed by Dehelper with 47 hits. "Quick access and get the result," "accurate translation of terminology," and "recommendations from teachers, friends, or colleagues" were the top three reasons given by respondents when asked why they chose certain dictionaries or reference sources. "Easy to use" was another important consideration. "Free access," on the other hand, was quoted just 47 times, making it less important.

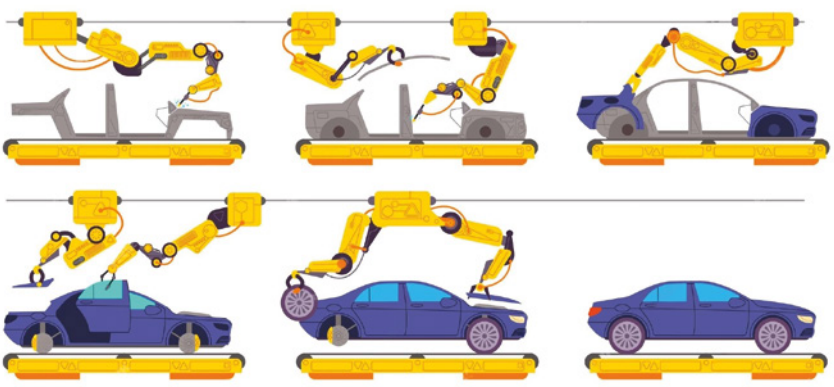
Finally, we asked respondents to rate different dictionaries and reference sources based on their preferred methods of dealing with specific terms or words found throughout the translation process. Above all, the German-Chinese specialized dictionary was the the first choice, according to the results of the questionnaire's scoring methodology. The online German encyclopedia and the "Ask an Expert" option came next. Getting assistance from specialized forums was the least popular choice.

The findings in this section provide the following insights:

1) When employing specialized dictionaries, the use scenarios for text production and translation outnumber those for text comprehension. As a result, traditional specialized dictionaries, which primarily collect words and their equivalents, are no longer enough to meet users' needs.
2) In terms of text production, respondents indicated the following writing categories in descending order: specifications and manuals (28.13%), production instructions (23.13%), training materials (22.5%), technical articles (18.75%), and internal communications (7.5%). However, among the dictionaries and lexicographic reference sources identified by respondents, German-Chinese specialized dictionaries were hardly mentioned. This implies that respondents frequently lack access to specialized bilingual dictionaries when an amount of specialized material is nedded.
3) When choosing specialized dictionaries or reference resources for text production, most respondents valued "fast consultation" and "accurate translations." Despite this, it is clear that Baidu Translate and Youdao Dictionary are not uniformly regarded as offering accurate translations and timely consultation to all responders. As a result, in the following part, we will look at how much influence dictionaries have on users when they utilize them to execute tasks.

3.3 Task solving

In this section, we conducted a mixed test with 160 respondents, focusing on two tasks related to specialized terminology in the manufacturing process. In Task 1, we asked all respondents to describe concepts based on a picture of automobile manufacturing (see



Source: Car factory assembly by Ssstocker (Artist). Dreamstime.com ID: 254703984

FIGURE 4. The picture about manufacturing process.

Figure 4) and they should use German and Chinese keywords or a short sentence. There are some online dictionaries and encyclopedias available. In Task 2, respondents shared their preferences and evaluations of the items needed in the microstructure of dictionary entries, along with their suggestions for improvements.

3.3.1 Task 1: Concept description

The word cloud was made to illustrate the frequency of Chinese keywords based on the findings from the concept description (see Figures 5 and 6). It was translated into English for easier comprehension.

The word cloud according to the frequency of Chinese keywords is shown in Figure 6. The most often stated keyword was "car body," as seen by its significant appearance in the figure's center. Other automotive-related terms that were often cited come next, including parts, technology, and manufacturing. Notably, automotive manufacturing-related verbs and nominalization like welding, coating, spraying, and stamping were used a lot. These words correspond with the procedures shown in Figure 4 and are strongly related to vehicle assembly. Furthermore, verbs that are relevant to manufacturing workflows, such as proceed, ensure, and test, were included to some degree.

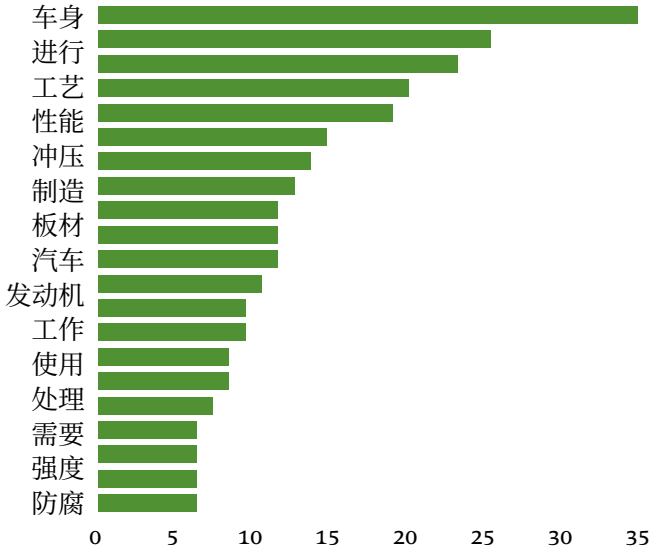


FIGURE 5. The frequency of Chinese keywords

Compared to the Chinese word cloud, the German word cloud (Figure 7) showed that *Abdeckung* 'cover' was the most frequently mentioned term, appearing prominently at the center. Although *Auto*, *Automobil*, and *Fahrzeug* are distinct nouns, all refer to automobiles. And *Körper* and *Karosserie* refer to the car body. Verbs related to automobile manufacturing, such as *schweißen* 'to weld' and *festschweißen* 'to weld up,' also appeared prominently.

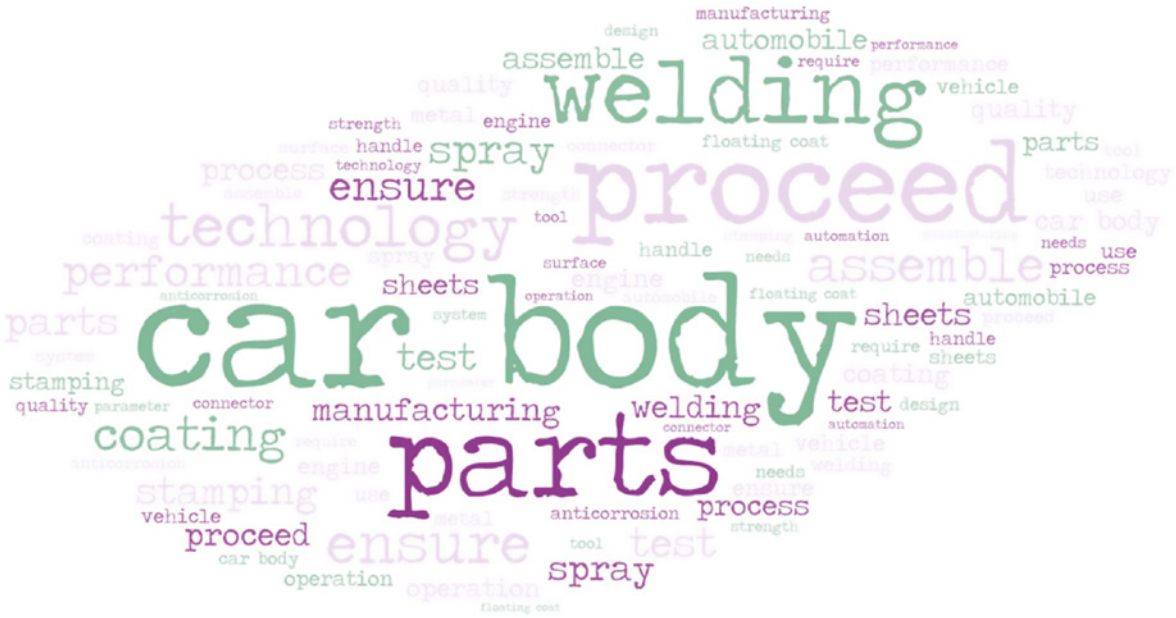


FIGURE 6. The Word cloud according to the frequency of Chinese keywords. Source: Created by the author

FIGURE 7. The word cloud according to the frequency of German keywords. Source: Created by the author

Additionally, nouns such as *Montage* 'assembly', *Beschichtung* 'coating', and *Schweißverbindung* 'welded joint' were frequently cited by respondents, reflecting key concepts in automotive manufacturing processes.

However, we were drawn to the word cloud when the significant term *einbalsamieren* appeared. *Einbalsamieren* 'to embalm' is a technique used by ancient cultures, especially the Egyptians, to preserve a corpse by halting the putrefaction of soft tissues. We hypothesize that the test respondents wanted to explain how an anticorrosion coating is applied during the manufacturing of an automobile body. However, they chose this wrong equivalent by mistake since the dictionary tools they used lacked contextual information. The underlying reason appears to be that, among the 160 participants, only 87 used general dictionaries or online translation tools when describing concepts in German. Among the tools used, Baidu Online Translation remained the most popular choice among respondents, with *Youdao Dictionary* and Dehelper also being widely used.

3.3.2 *Evaluation to the entry*

In Task 2, we presented entries for the verb zusammenfügen (English: „to assemble") from the *PONS German-Chinese Online Dictionary* (Figure 8) and *the New German-Chinese Dictionary App* (Figure 9) within the context of car assembly, as depicted in Figure 4. Respondents were then asked to evaluate these entries based on four aspects.

First, we examined which specialized terms could function as participants of the verb *zusammenfügen* (English: "to assemble," as a transitive verb). Among the five given options, the selection percentages were as follows: the chassis (46.88%), the wheel set (59.38%), the coupling (62.5%), the gearbox (61%), and the ground (57.5%). As expected, the first four options are all relevant as parts or components of vehicles, whereas ground should be excluded as a valid object for this verb.

Next, we asked respondents which items in the two dictionary entries were most helpful for intuitively understanding the terms and answering the previous question. Among the 160 respondents, over 110 indicated that the Chinese equivalents provided in the entries were the most helpful for grasping the concepts. Additionally, example sentences were considered valuable for learning how the verb is used in specific contexts. A total of 103 respondents highlighted the effectiveness of using color coding to distinguish between different types of information in the entries. Furthermore, 95 respondents found abbreviation markers for verbs particularly useful for distinguishing between transitive and intransitive usage.

70% of respondents said that the largest challenge they had when using the two dictionary screenshots to answer the previous question was the absence of collocations. More than 60% of respondents said they had trouble telling the different kinds of lexicographic information in the entries apart. Furthermore, 58.75% of respondents cited the lack of synonyms as another major obstacle influencing their decision-making, and 59.38% said that the small quantity of example sentences made it difficult for them to choose the right response.

Finally, we asked respondents for suggestions on how to improve the online bilingual specialized dictionary and the bilingual dictionary app. We collected

FIGURE 8. Screenshot of the entry *Zusammenfügen* 'assemble' from the Pons German-Chinese online dictionary

FIGURE 9. Screenshot of the entry *Zusammenfügen* 'assemble' from the New German-Chinese Dictionary App

all feedback provided in German, totaling about 100 entries. A word cloud was generated to visually represent the key suggestions (see Figure 10). In terms of content, respondents emphasized that definitions, example sentences, and context are the most essential elements to include in dictionary entries. Some respondents also suggested incorporating multimedia elements, such as videos and illustrations, to enhance the visualization of online dictionary entries. Additionally, respondents highlighted the importance of accuracy, detail, and integration within the dictionary itself. Beyond improvements to the entries, there were also suggestions for adding new words, improving accessibility to the dictionary, and including social and cultural aspects as valuable additions for future revisions.

FIGURE 10. The word cloud according to respondents' suggestions. Source: Created by the author

4 Conclusion

In this study, we focused on three target user groups for the GCMA dictionary project: Chinese engineers and technicians, translators, and students in related fields. It is important to note that the user groups have specific needs and varying levels of German proficiency and expertise in the automotive industry, often related to the concrete activities and tasks encountered in their daily work.

Regarding the first research question, the personal information showed that the sample user groups had different levels of knowledge in automotive production, with the majority of respondents classified as semi-experts. However, their German proficiency remained at a basic level. Respondents stressed the importance of equivalents, examples, collocations, and contextual information in dictionary entries, as these elements are critical for writing and translation. The task's results in Section 3.3 indicate that, while some respondents demonstrated the capacity to communicate in specialized German contexts—such as effectively describing concepts using Chinese terminology—they still struggled to identify acceptable German equivalents. This issue was especially noticeable in the absence of precise contextual information, which made it difficult for them to to apply the properly equivalents in specific scenarios.

For the second research question, designing user-oriented lexicographic data, microstructures, and other elements specific to the target user groups can serve as the foundation for our dictionary project. Furthermore, in automotive manufacturing, specialized verbs and nominalization are frequently utilized in texts. These two categories are very useful in characterizing processes, connections, relationships, and attributes (Faber et al., 2005). Unlike typical online dictionaries, encyclopedias, or translation tools, the entry design must consider terms' semantic, syntactic, and pragmatic behavior, as well as their combinatorial possibilities (Faber, 2009; 2015). This method ensures that the dictionary has more accurate and contextual resources for specialized communication.

Although this pilot study involved a limited number of target users, the data obtained can serve as a comparative reference for future dictionary compilation efforts in other specialized fields. In the automotive manufacturing sector, advancements in algorithms, computational power, and data growth have enabled significant breakthroughs in artificial intelligence technologies, particularly in areas such as semantic understanding, knowledge representation, and logical reasoning. The development of the GCMA dictionary represents a valuable addition to resources in the automotive field, providing a powerful tool to support Chinese automotive professionals in global communication.

References

Bergenholtz, Henning & Tarp, Sven (2002). Die moderne lexikographische Funktionslehre. *Lexicographica*, 18(2002), pp.253-263. <https://doi.org/10.1515/9783484604476.253> [Last access: 20 August 2024].

Bergenholtz, H. & Tarp, S. (2010). CHAPTER 1. LSP Lexicography or Terminography? The lexicographer's point of view. In P. A. Fuertes-Olivera (Ed.), Specialised Dictionaries for Learners (pp. 27-38). Berlin, New York: De Gruyter.

Cabré, Maria Teresa (1999). *Terminology theory, methods and applications.* Amsterdam, The Netherlands: John Benjamins publishing company.

—— (2003). Theories of terminology: Their description, prescription and explanation. *Terminology. International Journal of Theoretical and Applied Issues in Specialized Communication*, Volume 9, Issue 2, Jan 2003, pp. 163 – 199.

—— (2023). *Terminology Cognition, language and communication*. Amsterdam, The Netherlands: John Benjamins publishing company.

Cabré, Maria Teresa; Estopá, Rosa; Freixa, Judit; Lorente, Mercè; Tebé Soriano, Carles (2002). Les necessitats terminològiques del traductor científic. In J. Chabás, R. Gaser, & J. Rey (Eds.), *Translating science. Proceedings 2nd International Conference on Specialized Translation* (pp. 165–174). Barcelona, Spain: University Pompeu Fabra.

Cabré, Maria Teresa; Lorente Casafont, Mercè (2021). Panorama teòric de la terminologia actual. *Terminalia*, Núm. 24, pp. 57-63.

Faber, Pamela; Márquez Linares, Carlos; Vega Expósito, Miguel (2005). Framing Terminology: A Process-Oriented Approach. *Meta*, 50(4). <https://doi.org/10.7202/019916ar> [Last access: 20 August 2024].

FABER, Pamela (2009). The cognitive shift in terminology and specialized translation. *MonTI - Monografías de Traducción e Interpretación*, pp. 107-134.
—— (2015). Frames as a Framework for Terminology. In *Handbook of Terminology*. Edited by Hendrik J. Kockaert and Frieda Steurs. Amsterdam: John Benjamins, vol. 1, pp. 14–33.
FABER, Pamela & Leon-Araúz, Pilar (2021). Designing terminology resources for environmental translation. In M. Ji and S. Laviosa (eds.), *The Oxford Handbook of Translation and Social Practices*, pp. 586–615. Doi: 10.1093/oxfordhb/9780190067205.013.7 [Last access: 20 August 2024].
GOUWS, Rufus (2020). Special Field and Subject Field Lexicography Contributing to Lexicography. Lexikos, 30(1). https://doi.org/10.5788/30-1-1568 [Last access: 20 August 2024].
HAN, Fei (韩斐)(2024). Zhongguo Zhizao 2025 Beijingxia Qichezhizao Zhuanye Daxuesheng Jiuye Lujin Zhanwang. "中国制造2025"背景下汽车制造专业大学生就业路径展望 [Outlook of Employment Path of College Students Majoring in Automobile Manufacturing Under Background of "Made in China 2025"]. *Internal combustion engine and parts*, (20),116-119.doi:10.19475/j.cnki.issn1674-957x.2024.20.018 [Last access: 20 August 2024].
LEW, Robert (2010). Multimodal Lexicography: The Representation of Meaning in Electronic Dictionaries. *Lexikos 20* (AFRILEX-reeks/series 20: 2010): 290-306.
MÜLLER-SPITZER, Carolin (2014). Methoden der Wörterbuchbenutzungsforschung [Methods of research in dictionary use / Méthodes de la recherche sur l'utilisation des dictionnaires]. *Lexicographica*, 30(2014), pp.112-151. https://doi.org/10.1515/lexi-2014-0005 [20 August 2024].
SAGER, Juan (1990). *A practical course in terminology processing*. Amsterdam: John Benjamins.
SCHIERHOLZ, Stefan (2003). Fachlexikographie und Terminographie. *Zeitschrift für Angewandte Linguistik*, 39, pp: 5-28.
—— (2014). 17. New developments in lexicography for special purposes I: An overview of linguistic dictionaries. In R. Gouws, U. Heid, W. Schweickard & H. Wiegand (Ed.), Supplementary Volume Dictionaries. *An International Encyclopedia of Lexicography: Supplementary Volume: Recent Developments with Focus on Electronic and Computational Lexicography* (pp. 431-442). Berlin, Boston: De Gruyter Mouton. https://doi.org/10.1515/9783110238136.431 [Last access: 20 August 2024].
WIEGAND, Herbert Ernst (1988): Was eigentlich ist Fachlexikographie? Mit Hinweisen zum Verhältnis von sprachlichem und enzyklopädischem Wissen. In: Horst Haider Munster et al. (Hrsg.): *Deutscher Wortschatz*. Berlin, New York: De Gruyter, pp.729-790.

Note

1. *https://www.wjx.cn/vm/PqTmwGQ.aspx*

Questionnaire on the use of specialized dictionaries

A. Personal information

1. I am a/an
☐ Engineer/technician ☐ Translator ☐ Student _____ ☐ Others _____

2. If you choose engineer/technician, please specify which section your company belongs to:
☐ Original Equipment Manufacturers (OEMs)
☐ Automobile Parts Suppliers (APS) ☐ New Energy Vehicles (NEVs)
☐ Others _____

3. If you choose students, please specify your major:
☐ Vehicle engineering ☐ Mechanical engineering ☐ Electrical engineering
☐ Others _____

4. If you choose translators, what types of translation tasks do you often handle?
☐ Translation of German production data, documentation, drawings, and other technical documents into Chinese.
☐ Translation of Chinese production data, documentation, drawings, and other technical documents into German.
☐ On-site interpretation support for production improvement, equipment installation, etc.
☐ Others _____

5. Have you ever been to Germany? (Multiple choices)
☐ Never ☐ Yes, for travelling ☐ Yes, for language training
☐ Yes, for exchange programmes during university
☐ Yes, for in-house training ☐ Yes, for technical support ☐ Others _____

6. Are you currently studying German?
☐ Yes ☐ No

7. How long have you been studying German?
☐ 0-1 years ☐ 1 to 3 years ☐ Over 3 years

8. For the knowledge and expertise in the Automotive Engineering, I:
☐ Don't know too much ☐ Have learned or got some training about this subject
☐ Am well applied in the subject ☐ Am an expert in this area and can train others

B. Dictionary use

1. In what kind of situations do you use German-Chinese specialized dictionaries? (Multiple choices)
☐ When reading technical documents
☐ When doing translation, I need to clarify the meaning of German terminology
☐ When writing technical documents, I need to consult the collocations of some terms
☐ When attending seminars or lectures, I need to clarify the definitions of terms so that I can understand and communicate better
☐ Others _____

2. When reading documents/materials, for German terminology, you prefer:
☐ Consulting a specialized German-Chinese dictionary to clarify the Chinese meaning
☐ Understanding the meaning through the context
☐ Asking colleagues from Germany to understand the meaning
☐ Consulting an online encyclopedia
☐ Others_____

3. When writing German texts/documents, what kind of document did you write?
☐ Technical article ☐ Specification/Manuals ☐ Production instruction
☐ Training material ☐ Internal emails ☐ Others_____

4. Do you use German-Chinese specialized dictionaries or other reference tools when writing?
☐ Yes ☐ No

5. If you choose "yes" in the previous question, please indicate which dictionaries or reference tools you use often:
☐ Dehelper (德语助手)
☐ Baidu Translate (百度翻译)
☐ Youdao (有道词典)
☐ Wiktionary (维基词典)
☐ Others_____

6. Why did you choose these dictionaries? You can make multiple choices:
☐ Free access ☐ Recommend from teachers/friends/colleagues
☐ Accurate translation of terminology ☐ Quick access and get the result
☐ Easy to use ☐ Others _____

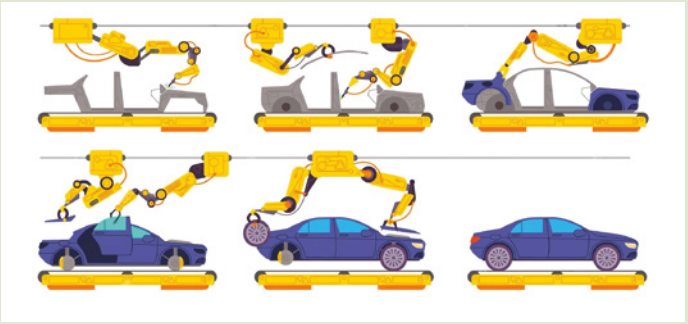
7. When encountering terminology in the translation process, you prefer _____ (please rank them according to your preference).
☐ Online encyclopedias
☐ Specialized German-Chinese dictionaries
☐ Support from experts
☐ Professional forums for help
☐ Others _____

C. Fill tasks

This section contains two tasks for which you can choose the appropriate dictionaries or tools to complete, and please indicate which tools were used.

Task 1: Concept description

- Please summarize the concept both in Chinese and German in three or four keywords (or sentences, as you can according to the following picture:



Source: Car factory assembly by Ssstocker (Artist). Dreamstime.com ID: 254703984

- If you'd like, could you briefly describe the concept in Chinese?

Please indicate whether you described the concept by yourself or referred to any online tools.
☐ Myself ☐ Online tools, name _____

Task 2: Answer questions

In this section, you will see two screenshots from two German-Chinese dictionaries. Please check and answer the following questions (check all that are appropriate):

(Pons German-Chinese dictionary)

(*Das Neue Deutsch-Chinesische Wörterbuch*)

Q1: As a transitive verb, which of the following options do you think could be the object of *zusammenfügen*? (check all that are appropriate)

☐ das Fahrgestell ☐ der Radsatz ☐ die Kupplung ☐ der Boden
☐ das Getriebe

Q2: Which information in the entries can help you more intuitively see their composition and complete the answer to the previous question? (check all that are appropriate)

☐ The verb table helps me distinguish between active and passive forms of verbs
☐ Chinese equivalents help me better understand the concept
☐ The example provides me with specific context about the usage
☐ The color of the markers helps me to separate the different items from each other
☐ Others _____

Q3: Are there other difficulties or problems in the consulting process (check all that are appropriate)?

☐ It's difficult to distinguish the meaning of each option
☐ Lack of example sentences
☐ The collocation of the verb is not very clear
☐ Lack of synonyms
☐ Others _____

Q4: Do you think tany improvements that need to be made to these dictionaries? Write down your suggestions.