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Optimizing Interactive Infographics: A Needs Study for The Development of Begrüßung Materials in German Language Teaching at SMAN 14 Palembang

Krisnatalety[*], Makmum Raharjo, LR. Retno Susanti
FKIP, Universitas Sriwijaya, Palembang, 30139, Indonesia

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A B S T R A C T

This study aims to develop interactive infographic-based learning media to enhance the effectiveness of German language teaching, particularly for the Begrüßung material at SMAN 14 Palembang. The research utilized a descriptive qualitative method to analyze the needs of both students and teachers through questionnaires, classroom observations, and interviews. The results show that the majority of students (63%) and teachers (79%) perceive a high need for the development of interactive learning media, particularly infographics that support engagement and material comprehension. Data from the learner needs analysis revealed that 63% of students are in the "high" category, with a significant need for innovation in media, while 29% fall into the "medium" category. Similarly, 79% of teachers expressed the need for such media to improve teaching effectiveness. Interactive infographics, especially those incorporating quizzes and audio, are expected to increase student engagement and improve learning outcomes. The study concludes that interactive infographic-based media can address the challenges in language learning, offering a more inclusive and engaging experience. Furthermore, the research provides a solid foundation for designing adaptive learning media aligned with the needs of both students and teachers in the digital era.

1. Introduction

Learning is a complex process that takes place in classrooms and educational institutions with the main objective of teaching students through the development of effective methods (Gunadi et al., 2022). In this process, the teacher acts as a facilitator who integrates various elements, including students, textbooks, learning media, school environment, and learning situations. The collaboration of these elements aims to develop learners' communication, critical thinking and creative skills. Teachers play a very important role in creating a dynamic and fun learning atmosphere that stimulates learners' active involvement (Sari et al., 2024).

Foreign language learning, especially German at the high school level in Indonesia, has a significant contribution in building cross-cultural communication skills while enhancing students' academic excellence (Purwono et al., 2021). Begrüßung, which deals with self-introduction, is one of the fundamental initial topics in learning German. It not only helps students start conversations but also creates a good atmosphere for interaction. In the German curriculum, learning focuses on four main competencies, namely listening (hören), speaking (sprechen), reading (lesen), and writing (schreiben), which refer to the A2 standard of the Gemeinsame Europäische Referenzrahmen für Sprachen (GER) or the Common European Framework of Reference for Languages (CEFR). In addition, six curricular objectives covering communication skills, cultural understanding, critical thinking, and character development are integrated to create real and relevant learning experiences (Fauzy & Julaikah, 2023).

In the context of 21st century learning, teachers are required to be able to implement technology in the learning process (Wahyuni et al., 2020). The application of this technology can support speaking learning, especially in German, which allows students to practice independently outside the limitations of formal lesson hours at school. Research by Rahayu et al. (2022) shows that technology can increase student engagement and the effectiveness of foreign language learning. One of the technological media that can be used is interactive infographics, which is the delivery of information or knowledge through visually appealing graphic media. Infographics allow for a more effective presentation of information because they combine visual elements and text, making them easy for learners to understand (Grasia et al., 2023).

Learning media, including teaching materials, have a very important role in creating an effective, efficient and meaningful learning process (Riskawati et al., 2021). Learning media serves as an intermediary that helps teachers convey information in a more interesting and understandable way. It also motivates students by creating a conducive learning environment, stimulating thinking, and improving students' skills. Teaching materials, on the other hand, are designed to facilitate interaction between teachers and learners by taking into account the principles of pedagogy, cultural contextualization, and the needs of learners. Zinnurain & Gafur (2015) stated that well-designed learning media can increase student engagement, while appropriate teaching materials can improve concept understanding and learning outcomes.

At SMAN 14 Palembang, the teaching of German faces several challenges, including limited learning time, a large number of subjects, and the distinct characteristics of German compared to other languages that students have previously learned. As a School for Inclusive Education (SPPI), SMAN 14 Palembang also accommodates students with special needs (PDBK), making the development of inclusive and interactive learning media an urgent necessity. Interactive infographics, equipped with barcodes or other digital elements, are considered capable of providing solutions to enhance learning effectiveness, especially for PDBK.

Needs analysis is an important first step in the learning media development process. This process aims to identify the gap between the current condition and the expected ideal condition. In the context of developing interactive infographics for Begrüßung, needs analysis involves collecting data from students, teachers and other stakeholders to understand their specific needs (Annisa & Heryanto, 2023). The results of this analysis form the basis for designing a suitable solution, so that the intervention is truly relevant and effective in achieving the learning objectives.

The use of interactive infographics in German language learning is expected to be able to answer the various challenges faced at SMAN 14 Palembang. This media not only provides a more interesting learning experience, but also supports students' active involvement, improves speaking skills, and helps students understand the cultural context in German. Thus, optimizing the use of interactive infographics is a strategic step in improving the quality of German language learning while meeting the needs of learners, including PDBK, in an inclusive and adaptive manner.

2.   Methodology

This research uses a qualitative descriptive approach that aims to describe in depth the experiences and phenomena observed through the collection of rich and detailed data (Anggraini et al., 2021). This qualitative descriptive method was chosen to analyze the needs and development of interactive infographic learning media on Begrüßung material in German language learning. The research subjects were students of class XII of SMAN 14 Palembang in the academic year 2024-2025, who were actively studying German as a foreign language.

To obtain comprehensive data, data collection was conducted using a questionnaire given to 36 learners as the main respondents and to two German language teachers from SMAN 5 Palembang and SMAN 1 Palembang. The data collected through this questionnaire covered various aspects relevant for the development of learning media, namely pedagogical, technical, cognitive, socio-cultural, and evaluation aspects. The use of a Guttman scale in measuring respondents' attitudes allowed the researcher to obtain firm and measurable data regarding respondents' perceptions and needs for interactive infographics.

Data analysis was conducted through a systematic approach utilizing a Guttman scale to categorize responses based on six predetermined key aspects. The data obtained was analyzed to identify specific needs and user preferences for the designed learning media (Kaharuddin, 2020). This analysis process includes data reduction, data display, and conclusion drawing stages to ensure the validity and reliability of the research results. In addition, data triangulation was conducted by comparing the results from student questionnaires and in-depth interviews with teachers to gain a holistic understanding of the needs of learning media development (Fadli, 2021).

The results of this analysis are expected to provide a solid foundation in designing and developing interactive infographics that are relevant to students' needs and contextual to the learning environment at SMAN 14 Palembang. With a complex and systematic approach, this research aims to produce learning media that is not only effective but also inclusive and innovative.

3.   Results and Discussion

The results and discussion in this study aim to determine and analyze the needs of interactive infographic learning media as a first step in developing learning media for the Senior High School (SMA) level in German language subjects. The needs questionnaire was distributed to the research subjects, namely one XII class consisting of 36 students, as well as two German language teachers from SMAN 14 Palembang and SMAN 5 Palembang. The data obtained reflects the students' and teachers' perspectives regarding their needs and preferences for the learning media to be developed. The research instrument in the form of a questionnaire was designed to collect relevant and systematic data. The questionnaire for learners includes an analysis of learning needs, including materials, methods, and media used, as well as their preferences for technology-based media. Meanwhile, the questionnaire for teachers covers learning needs analysis from the teacher's perspective, learning objectives, and evaluation of existing learning media (Permatasari et al., 2022). The instrument utilizes a Guttman scale to ensure clarity and decisiveness in measuring respondents' attitudes towards the various aspects identified. Are is given in Table 1 regarding aspects and indicators of learner needs Analysis.

Table 1. Aspects and Indicators of Learner Needs Analysis.

Aspect	Indicator
Pedagogy	Competence, Learning Style, Learning Process, Characteristics
Technical	Accessibility, Skills
Cognitive	Information Absorption Ability, Problem Solving Ability, Material Understanding
Aesthetics	Preferences, Visual appearance and Aesthetics
Social Culture	Relevance, Social Values and Local Culture
Evaluation	Understanding Level Measurement, Feedback

Meanwhile, the questionnaire for teachers covers learning needs analysis from the teachers' perspective, learning objectives, and evaluation of existing learning media (Nasution & Diansyah, 2020). This instrument utilizes a Guttman scale to ensure clarity and firmness in measuring respondents' attitudes towards the various aspects identified. Table 2 below presents the aspects and indicators used in the teacher needs analysis. Each aspect is designed to describe key elements relevant to the development of interactive infographic learning media. The indicators listed provide guidance in evaluating specific needs relating to pedagogy, technical, cognitive, aesthetic, socio-cultural and evaluation (Santoso, 2021).

Table 2. Aspects and Indicators of Teacher Needs Analysis

Aspect	Indicator
Pedagogy	Understanding, Learning Methods
Technical	Infrastructure, affordability
Cognitive	Ability, Material Understanding
Aesthetics	Design, Appropriateness
Social Culture	Integration, Diversity Representation
Evaluation	Internal Evaluation Tools, Reports and Data

Based on the explanation in the table above, the next step is to conduct an in-depth analysis of the results of the questionnaire that has been distributed to students and teachers. The data from this questionnaire provides detailed insights into the need for interactive infographic-based learning media development, especially in the context of German language teaching. This analysis process will include a thorough evaluation of various aspects, such as pedagogical relevance, technical feasibility, cognitive usefulness, aesthetic appeal, socio-cultural sensitivity, and evaluation effectiveness (Nurhayati et al., 2023). The findings of this analysis will not only be an indicator of how significant each aspect is perceived by the research subjects, but also serve as a strategic foundation in designing learning media that suits the practical needs and characteristics of users in the field. Below are the results of the student needs analysis which can be seen in Table 3.

Table 3. Results of the Learner Needs Analysis Questionnaire

Category	Interval	Persentage Interval	Persentaage (%)
High	53-79	$\geq 67\%$	63 %
Medium	27-52	$33 - 66\%$	29%
Low	0-26	$\leq 32\%$	8 %

The questionnaire data from the needs analysis that has been given to 36 students of class XII SMAN 14 Palembang, three categories of frequency intervals with varying percentages are obtained according to the questionnaire responses given. Based on the analysis results presented in the learners' needs graph in Table 3, it can be seen that the distribution of learners' needs shows a significant tendency in the "high" category with a percentage of 63%. Meanwhile, the "medium" category recorded a percentage of 29%, reflecting moderate needs in certain groups. The "low" category only reached a percentage of 8%, indicating that the needs at this level are relatively minimal. The results of this distribution provide a clear picture of the urgency level of learning media development, with the majority of learners showing a significant need for innovation, particularly in the context of interactive infographic-based learning. This finding also reinforces the importance of adjusting media development strategies to address the needs of the majority, without excluding groups with moderate and low levels of need. In addition, the questionnaire results also show that learners need interactive and effective learning media to help them be more involved in the learning process. The media is expected to be able to connect learning with learners' socio-cultural life, so that the material becomes easier to understand through visualization, audio, and video. This will also motivate learners to be more active in learning.

Teachers can facilitate this by designing learning strategies that are more targeted and in accordance with the needs of students (Ismaeel & Al Mulhim, 2021).

The results of the learner needs analysis questionnaire show the distribution of needs divided into three main categories: high, medium, and low. The majority of respondents, 63%, were in the "high" category with a score interval of 53-79 and a percentage interval of >67%. This reflects the urgent need for the development of appropriate learning media, especially in supporting interactive infographic-based learning. A total of 29% of learners are in the "medium" category with a score interval of 27-52 and a percentage interval of 33-66%, which shows a significant need but does not dominate. Meanwhile, the "low" category with a score interval of 0-26 and a percentage interval of <32% only includes 8% of respondents, which means that a small proportion of learners have a relatively minimal need for learning media innovation.

This result is in line with the findings of previous research which shows that interactive learning media designed according to the needs of the majority of learners can increase learning motivation, concept understanding, and active participation in the learning process (Septyasari et al., 2018). In addition, the distribution of these results also supports the views of other studies which state that learning needs in the high category are often related to the lack of variety in conventional teaching methods used by educators (Mansur & Rafiudin, 2020). Thus, the integration of these findings confirms the importance of designing adaptive and needs-based learning media to optimize the teaching-learning process, especially in the digital era that increasingly demands innovation in material delivery. Meanwhile, the results of the teacher needs analysis also indicate a similar need for the learning media to be developed. These results are presented in Table 4 below.

Table 4. Teacher Needs Analysis Questionnaire Results

Category	Interval	Persentase Interval	Persentaage (%)
High	25-36	≥ 67 %	79 %
Medium	13-24	33 – 66 %	20 %
Low	0-12	≤ 32 %	1 %

The results of the teacher needs analysis questionnaire show a distribution of needs dominated by the "high" category, with a percentage of 79%, a score interval of 25-36, and a percentage interval of >67%. This indicates that the majority of teachers really need the development of interactive infographic-based learning media to support the teaching process. The "moderate" category includes 20% of respondents with a score interval of 13-24 and a percentage interval of 33-66%, indicating a moderate level of need. Meanwhile, the "low" category, with a score interval of 0-12 and a percentage interval of <32%, recorded only 1% of respondents, indicating that only a few teachers feel the need for this learning media innovation is not very urgent.

This distribution of results confirms the importance of developing learning media that not only meet students' needs but also support teachers in the teaching

process. This finding is in line with previous research by Putri & Ana (2024) which shows that interactive learning media can assist teachers in delivering material more effectively, improving classroom interaction and strengthening student engagement. In addition, these results also reinforce the argument that teachers' need for modern learning media is often related to the challenges of integrating technology into the teaching process (Afriani et al., 2022). Thus, this data provides a strong basis for designing learning media that is not only responsive to students' needs, but also pays attention to aspects of practicality, flexibility, and effectiveness for teachers as the main facilitators of learning.

Based on a questionnaire that has been filled in by two German teacher respondents. From the analysis, 75% of the data shows that teachers really need innovation in learning media. This innovation is important to increase student engagement in the learning process. In addition, 20% of the data highlighted technical and socio-cultural aspects that need to be considered in media development, while 1% of the data related to evaluation aspects. Mario et al (2021) emphasize that infographic-based learning media has great potential to increase student engagement by presenting information visually and in a clearly structured way, as well as the importance for teachers to continually develop creativity in using various media to make the subject matter easier to understand, especially when dealing with abstract concepts.

Al-Asy'ari & Alrianingrum (2022) showed that intective infographics are feasible to use as German language learning media with the results of media validation of 87.7% and material validation of 90%, thus the development of interactive infographics with the theme Schule based on Adobe XD Software is feasible and can be used as German language learning media phase F.

4.   Conclusion

This study highlights the importance of interactive infographic-based learning media to enhance the effectiveness of German language learning, particularly on the Begrüßung material at SMAN 14 Palembang. Analysis revealed a significant demand for innovative media to boost student engagement and understanding. Interactive infographics simplify abstract concepts and foster inclusivity. Features like quizzes and pronunciation audio are recommended to improve effectiveness. This research lays a foundation for developing adaptive, technology-based learning tools that meet the demands of the digital era.

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