# Digital Infographics as a Dynamic Information-Transfer Model for Academic Discourse in Language Classroom

*Infografik Digital sebagai Model Pemindahan Maklumat Dinamik untuk Wacana Akademik dalam Kelas Bahasa*

WAN NAJMIYYAH WAN MD ADNAN, NORHAYATI HUSIN,
NOORYUHANIS HASHIM & ROSZAINORA SETIA

ABSTRACT

*The integration of digital infographics in language classrooms has developed into an innovative approach to promote academic discourse and student engagement. However, given the limitations of traditional teaching methods, there is a need to improve student engagement and information transfer in language classrooms. This study explores the potential use of digital infographics as an information-transfer model for academic discourse. It aims to answer two primary research questions: 1) What are the features of digital infographics used by students to organise and deliver information during language classroom discourse? and 2) How can teachers help students use digital infographics in classroom discourse? A qualitative research design was employed. 44 students reviewed selected documentaries, created digital infographics, and presented their reviews to small groups of students. The digital infographics were then collected and analysed by two experienced raters. Coding was used to systematically categorise the data. The thematic areas emerged from the data were then explored. The findings indicated that information organisation, as well as the aesthetics and functionality of the digital infographics, are features that should be included when considering digital infographics as an information-transfer model for language classrooms. This study then identified teaching strategies to help students use digital infographics in classroom discourse. The study proposes Digital Infographics Information-Transfer Model (DITRAM) to facilitate the effective integration of digital infographics in the language classroom. In conclusion, the study provides a better understanding of how digital infographics can be structured and used to convey information in academic discourse in the language classroom.*

*Keywords: digital infographics, information-transfer model, academic discourse, teaching strategies, language classroom*

ABSTRAK

*Pengintegrasian infografik digital dalam kelas bahasa telah berkembang menjadi pendekatan inovatif untuk mempromosikan wacana akademik dan penglibatan pelajar. Walau bagaimanapun, dengan keterbatasan kaedah pengajaran tradisional, terdapat keperluan untuk meningkatkan penglibatan pelajar dan pemindahan maklumat dalam kelas bahasa. Kajian ini meneroka potensi penggunaan infografik digital sebagai model pemindahan maklumat untuk wacana akademik dalam kelas bahasa. Tujuan kajian ini adalah untuk menjawab dua persoalan utama kajian: 1) Apakah ciri-ciri infografik digital yang digunakan oleh pelajar untuk menyusun dan menyampaikan maklumat dalam kelas bahasa? dan 2) Bagaimanakah pendidik boleh membantu pelajar menggunakan maklumat grafik digital semasa proses pembelajaran di kelas? Reka bentuk penyelidikan kualitatif digunakan. 44 orang pelajar menyemak dokumentari yang dipilih, memindahkan maklumat ke dalam bentuk infografik digital, dan membentangkan ulasan mereka di hadapan sekumpulan pelajar. Infografik-infografik digital tersebut kemudiannya dikumpulkan dan dianalisis oleh dua penilai berpengalaman. Pengekodan digunakan untuk mengkategori data secara sistematik. Seterusnya, analisa tematik juga digunakan untuk menganalisa data yang diperoleh. Kajian ini mendapati bahawa corak susunan maklumat, serta nilai estetika dan kefungsian infografik digital adalah ciri-ciri yang perlu ada pada infografik digital sebagai model pemindahan maklumat dalam kelas bahasa. Kajian ini kemudiannya mengenal pasti strategi pengajaran untuk membantu pelajar untuk menggunakan infografik digital dengan betul dalam pemindahan maklumat. Kajian ini mencadangkan Digital Infographics Information-Transfer Model (DITRAM) untuk memudahkan aktiviti wacana akademik dalam kelas bahasa. Kesimpulannya, kajian ini memberikan pemahaman yang lebih jelas tentang bagaimana infografik digital boleh distruktur dan digunakan untuk menyampaikan maklumat dalam wacana akademik sewaktu pembelajaran di dalam kelas bahasa.*

*Kata kunci: infografik digital, model pemindahan maklumat, wacana akademik, strategi pengajaran, kelas Bahasa*

## INTRODUCTION

Traditional methods of presenting information in classrooms often involve static visuals or text-based materials. While the methods can be effective for some language classrooms, they may not able to effectively engage students or promote active participation on all occasions. Language acquisition continues to be an ever-present barrier, especially when it comes to developing oral communication skills, be it speaking (Azman, Ahmad Zulfadhli, Nor Shaifura, Ahmad Fakrulazizi, and Zalinawati Abdullah (2022) or listening (Nurhidayati, Muhd Zulkifli, Umi Machmudah and Ilyana (2021). The traditional classroom setup may not always offer adequate opportunities and creativity for students to facilitate such skills. Infographics, on the other hand, provide a dynamic and engaging way to present information. Unlike the traditional ways of presenting information in the oral communication classroom, the use of infographics allows students to interact with the content and explore different aspects of the topics in a visually interesting and interactive manner. In today's rapid digital age, the way we share and communicate information has evolved significantly, and one tool that has emerged to facilitate information transfer during classroom presentations is digital infographics.

An infographic is a visual representation of information or data that effectively communicates a visual narrative. Typically, it condenses complex data into a simplified design with the aim of efficiently delivering information (Mohd Amin, Mohd Salihin Hafizi, Hoo and Mohd Faeez 2017; Parveen & Husain, 2021). However, the nuanced meaning of an infographic can go beyond this general definition. It is essentially a compilation of visuals, including data visualisations like pie charts and bar graphs, along with text, all working together to offer a clear and easily understandable summary of a given topic. It simplifies complex concepts and enhance learning by allowing students to visualise abstract ideas, explain processes, and connect concepts (Bicen & Beheshti, 2019). It is highly used due to its features that captivate students' interest and encourage prolonged engagement with the material, which in turn reinforces content understanding (Alwadei & Mohsen, 2023). Digital infographics play a significant role in improving information transfer during presentations; thus, there is a need to explore the impacts of digital infographics in classroom presentations, and the integration of digital infographics into academic discourse in the language classroom.

### THE IMPACTS OF DIGITAL INFOGRAPHICS IN CLASSROOM PRESENTATIONS

The use of infographics as a classroom tool has had a substantial positive impact on the academic performance of the students. One of the impacts of digital infographics is their cognitive and engagement benefits. It possesses the ability to attract attention, enhance understanding, and assist in the organisation and screening of information (Arlwele, 2017; Rezaee, Farahian, & Mansooji, 2020). The students also indicated that the utilisation of infographics had a positive impact on their acquisition and enhancement of life skills, including but not limited to communication, presentation, and teamwork abilities (Arlwele, 2017; Babaei, Ghavidel, & Riahinia, 2021). Therefore, researchers have identified infographics as an effective pedagogical tool for instruction and knowledge acquisition (Rezaee et al., 2020). Infographics also facilitate the process of studying by enhancing comprehension through the utilisation of visual elements, hence promoting effective retention of information (AlMashaleh, 2023; Bicen & Beheshti, 2019), such as understanding the elements of grammar and pronunciation.

Within the context of classroom discourse, the transition towards student-led presentations also brings about a transformation in the dynamic of knowledge transfer and engagement among students. Previous studies suggest that the integration of technology in infographics not only motivates students in their learning process but also contributes to their educational experience by fostering their digital learning abilities (Arlwele, 2017; Bicen & Beheshti, 2019). The use of infographics also develops digital and visual skills, analytical thinking, creativity, and long-term memorisation of vocabulary (Martix & Hodson, 2014). According to Jones, Sage, and Hitchcock (2019), incorporating infographics into education facilitates students' active involvement in real-world comprehension of tools for information dissemination. With the knowledge of the integration of infographics as a tool, it allows students to delve deeper into the contention creation process to fully understand the subject matter before transferring it into a non-linear way of presenting the idea.

Exploration on previous research has also led to the understanding that students can present information more effectively if they have a better understanding of the elements and features of digital infographics. It was discovered that all infographics' features (images and symbols, good design, attractive colours, concise texts, diagrams or charts) allow students to grasp the lesson better (Khan, 2021). Another reason for the integration of infographics in a lesson is that it facilitates students' learning sessions due to the information being concise and coherent, thus enhances students' creativity and productivity as well as their understanding and concentration (Mohd Amin et al., 2017). The use of infographics as visual content also tends to have a greater impact than auditory content (Bicen & Beheshti, 2019). Thus, the use of digital infographics is useful for helping students retain the content that the teachers are teaching them.

The incorporation of infographics into different writing assignments was observed to enhance students' attention to the quality of their work. This heightened focus is attributed to the notion that infographics seems to elevate students' emphasis on the excellence of their work (Mendenhall & Summers, 2015). However, Matrix & Hodson (2014) examined the written reflections of students who completed an infographic assignment in a communication studies class. Based on the findings of the study, it was found that the assignment achieved learning outcomes that were comparable to those of traditional assignments. These findings therefore highlight that there is a need to examine the features of digital infographics that are used by students to organise and deliver information during classroom presentations.

## THE INTEGRATION OF DIGITAL INFOGRAPHICS INTO ACADEMIC DISCOURSE IN LANGUAGE CLASSROOM

As digital infographics become increasingly important in classroom presentations, it is crucial to explore their integration into academic discourse in language classrooms. For one, infographics can be useful in fostering a more profound comprehension of visual and linguistic structures among students. Compared to traditional infographics, digital ones offer a better representation of design elements that are more appealing to students in terms of being more attractive, informative, and entertaining in providing complex information (Arlwele, 2017). With proper design elements and contents, such as colour, typography, context, and layout (Khan, 2021), these visual elements will ensure information presented in infographic form is more engaging to the audience (Ju Qing & Zi-yan, 2015; Khan, 2021; Martix & Hodson, 2014) and increase the students' learning retention (AlMashaleh, 2023). Various types of infographics have also been found to be beneficial in enhancing comprehension of grammar, tenses, and pronunciation (Bicen & Beheshti, 2019).

Moreover, digital infographics also improve reading comprehension and communication skills through the dynamic applicability of the visual texts. One of the opportunities students can seize is utilising reading strategies that can be employed in this process, such as the ability to paraphrase the main ideas of a text (López Cupita & Puerta Franco, 2019). As a result, students can actively participate in their self-learning, which also enhances their reading, writing, and critical thinking skills. This further enhances the memorability and enjoyment of the learning process, and students will feel motivated which would later on result in them being interested in learning the subject (Wu & Kuwajima, 2022). Hence, the integration of digital infographics in the language classroom enables students to grasp a wide range of language learning resources, hence aiding their comprehension and assimilation of linguistic concepts.

Although there was significant positive evidence of integrating digital infographics into language classrooms, it is crucial to address the limitations, particularly in redefining the role of teachers in facilitating effective integration. There were significantly positive influences of infographics on the teaching of grammar and vocabulary in foreign language learning (Asadnia & Atai, 2022; Babushkina, Eremkina, Porchesku, Rubleva, & Nikulina, 2022). However, one limitation found in the use of digital infographics is the students' tendency to present a simplified perspective on complex topics. Infographics also rely primarily on visual elements to convey information. Due to this reason, the act of oversimplification of information may result in misinterpretation of information, as students may not fully grasp the nuances or complexities of the topic (Bicen & Beheshti, 2019).

Research also found that teachers have a major role in addressing these limitations and facilitating the effective integration of digital infographics into language classroom discourse. They can assist in creating clear and concise infographics, provide timely feedback (Zou & Qi, 2020), and ensure that digital infographics are in line with the syllabus objectives and learning outcomes. Mohd Fauzi, Zulazhan and Muhammad Sabri (2020) indicated that there is a high need to develop a module for animated infographics in Arabic grammar learning. Such a model not only facilitates the development of linguistic knowledge and skills, but it also contributes to providing quality teaching and learning (Wan Najmiyyah, Najlaa' Nasuha, Aileen Farida, & Nooryuhanis, 2022). Beyond this, teachers could also encourage critical analysis, enabling students to evaluate and interpret digital infographics in a thoughtful manner and ensuring that students use proper citations and referencing (Fazilatfar, Elhambakhsh, & Allami, 2018). The language classroom would then have valuable integration into academic discourse. Hence, this accentuates the need to explore the areas of improvement in the digital infographics that correspond to the teaching strategies that can be utilised by the teachers.

All in all, while previous studies may have looked at the impacts of infographics on teachers and students (Arlwele, 2017; Bicen & Beheshti, 2019; Ju Qing & Zi-yan, 2015; Khan, 2021), the best practices for incorporating infographics into language learning may not have received enough attention. Exploring teacher's roles in supporting students in classroom discourse via visual infographics would therefore lead to a deeper understanding (Abdul Hamid, Ab Halim, & Sahrir, 2020; Babushkina et al., 2022). Thus, this study seeks to provide a comprehensive understanding of how infographics function as a model for information transmission in language classrooms to address these gaps. To achieve this, there are two research questions in this paper:

a) What are the features of digital infographics used by students to organise and deliver information during language classroom discourse?;
b) How can teachers help students use digital infographics in classroom discourse?

## METHODOLOGY

### RESEARCH DESIGN

The study employs qualitative methods of data analysis. The samples used for this study were 44 diploma students taking the course of Integrated Language Skills III (ELC231) at Universiti Teknologi MARA Cawangan Terengganu, Kampus Dungun. The decision to select these samples was based on their readily accessible nature and the convenience of sampling, which eased the data gathering process and methodology. Non-probability sampling was considered appropriate in this study due to its capacity to gather comprehensive information on the experiences of selected samples. Therefore, the utilisation of non-probability samplings would yield valuable insights in addressing the study inquiries (Merriam, 2009).

The first stage of the methodology involved the implementation of lesson plan where the students were instructed to review documentaries, transfer the information into digital infographics format, and deliver their reviews in front of small groups of audiences. These digital infographics were then collected, and the data were analysed by two experienced raters using an infographic evaluation checklist. The coding process involves the systematic categorisation of data based on predetermined coding categories. These coding categories serve as a framework for organising and analysing the data. For instance, a common coding scheme assigned numerical values to different responses, such as "1" for yes, "2" for no, and "3" for undecided. This allows for a standardised approach to coding, ensuring consistency, and facilitating data interpretation. By applying these coding categories to the data, researchers can effectively analyse and draw conclusions from the coded information. Descriptive statistics were employed to present the main characteristics of the data set.

After the data were analysed, the next stage of the study then explored the thematic or content areas that emerged from the data. Based on the thematic analysis that has been carried out, the researchers have identified areas for improvement and teaching strategies to be used. The result from the thematic analysis was then collected and summarised to highlight the areas of improvement of the digital infographics that corresponded to the teaching strategies that can be utilised by the teachers. Based on the result, the study then produces the most suitable information-transfer model for usage with digital infographics, particularly in the setting of language classrooms.

### RESEARCH CONTEXT

Integrated Language Skills III (ELC231) is a course that aims to equip students with essential writing abilities that will facilitate their enhancement of written English proficiency. The primary objective of this course is to provide students with the essential skills required to engage in meaningful discussions and analyse arguments and situations proficiently. This approach is used to improve students' language proficiency through the utilisation of diverse materials in various contexts. One of the ongoing assessments required for the course is Oral Commentary. In the Oral Commentary task, students are required to present an oral commentary on a movie or television programme for a duration of between 5-7 minutes in the presence of their peers. The students are required to present information in a coherent and succinct manner, employ visual aids proficiently, and actively interact with the audience by responding to inquiries. The decision to use documentary and digital infographics as the preferred style of presentation is considered the most effective, as it offers students a valuable opportunity to engage with the materials. Students can also learn about information literacy, visual literacy, and data literacy (Bicen & Beheshti, 2019).

DATA COLLECTION AND ANALYSIS

The process of data collection and analysis was then carried out for the study. In the first step of the process, a lesson plan for the task was developed and implemented with the students. Detailed information regarding the learning objectives, instructional strategies, resources, and assessment methods for the task was included in the lesson plan. The lesson duration, the order in which activities were performed, and required materials were also specified. The lesson plan that was utilised for the study is shown in Figure 1:

FIGURE 1. Lesson plan
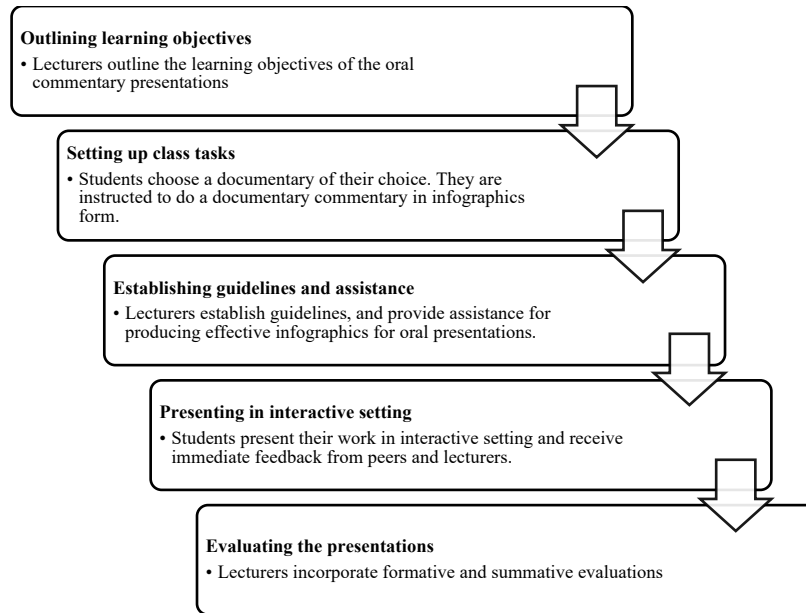


In the lesson plan, the lecturers first outlined the learning objectives of the oral commentary presentations. The learning objectives of the oral commentary presentation were that students need to produce oral commentaries of movie or drama documentaries, be able to produce responses orally to given situations, and demonstrate appropriate speaking strategies. Next, in setting up class tasks, each of the students chose a documentary of their choice and discuss their choices with the lecturer. They were then instructed to do a commentary on a documentary and use digital infographics as an aid for the presentation. After that, the lecturers established the presentation guidelines and provided assistance in the form of consultations with the students. In this step, the lecturers facilitate students' preparation to ensure that they were producing effective infographics for the oral presentations. This is because students often struggle when utilising infographics as a storytelling tool, particularly when analysing a documentary. The next step involved was the students conducted the oral documentary presentation in an interactive setting. Interactive setting here referred to semi-formal situation where students set up their own presentation corner and other students would go around and engaged in either one-one-one or small group interactions. This allowed the presenters to communicate with the audience at a more personal level. After the presentations, the lecturers then evaluated the presentations by incorporating formative and summative evaluations to the students. Formative evaluation was carried out to provide constructive feedback, and students were guided to provide peer evaluations as well. Meanwhile, summative assessment was carried out according to established criteria and rubrics aligned with
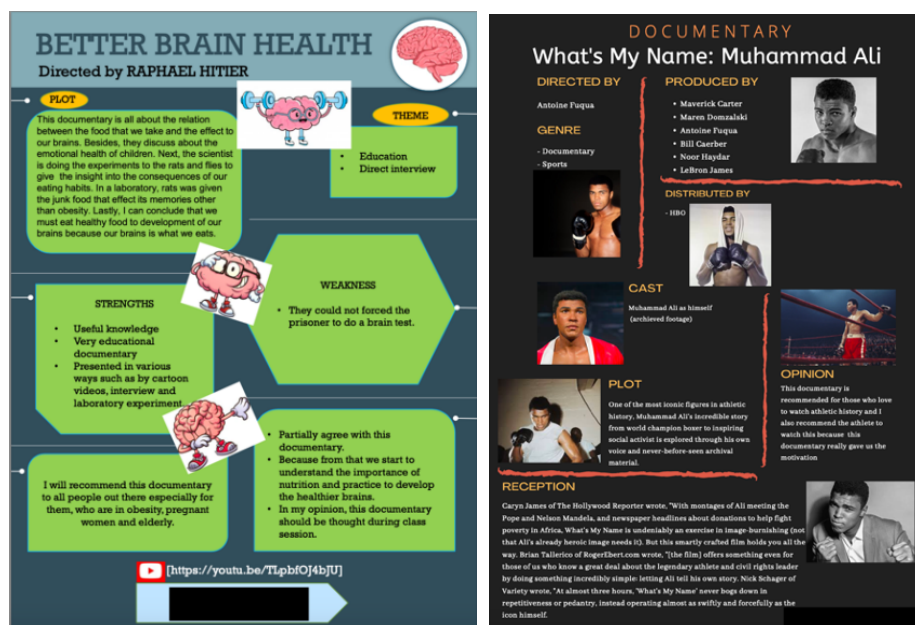
the syllabus and assignment standards, focusing on content, language, delivery, organisation, and audience engagement. All in all, the implementation of a well-designed and organised framework for information and visual considerations will greatly benefit the students.

Following the lesson plan, the digital infographics were collected from the students using Google Sheet for easy management. Figure 2 below shows the digital infographics collection process and Figure 3 shows the examples of digital infographics collected from the students.

FIGURE 2. Digital infographics collection process



FIGURE 3. Examples of students' digital infographics

The reliability and validity of the conducted analysis were ensured by the implementation of several measures. The first step was to implement a rigorous and stringent data collection process, wherein standardised procedures were used to gather relevant data. The standardised procedure included using a well-designed lesson plan based on an established English language syllabus. Additionally, the researchers were able to minimise any potential biases or errors during data collection by employing experienced teachers and raters who were familiar with the research objectives and methods.

## RESULTS AND DISCUSSIONS

This study presents two key research findings based on the research questions of the study namely: a) What are the features of digital infographics used by students to organise and deliver information during language classroom discourse?; and b) How can teachers help students use digital infographics in classroom discourse?

### FEATURES OF DIGITAL INFOGRAPHICS USED BY STUDENTS TO ORGANISE AND DELIVER INFORMATION DURING CLASSROOM PRESENTATIONS

The study revealed noteworthy findings that contributed to the features of digital infographics used by the students. to organise and deliver information during classroom presentations. The features were divided into two parts namely information organisation; and aesthetics and functionality.

#### INFORMATION ORGANISATION

To provide a comprehensive overview, Figure 4 summarises the findings for Information Organisation.

FIGURE 4. Information Organisation
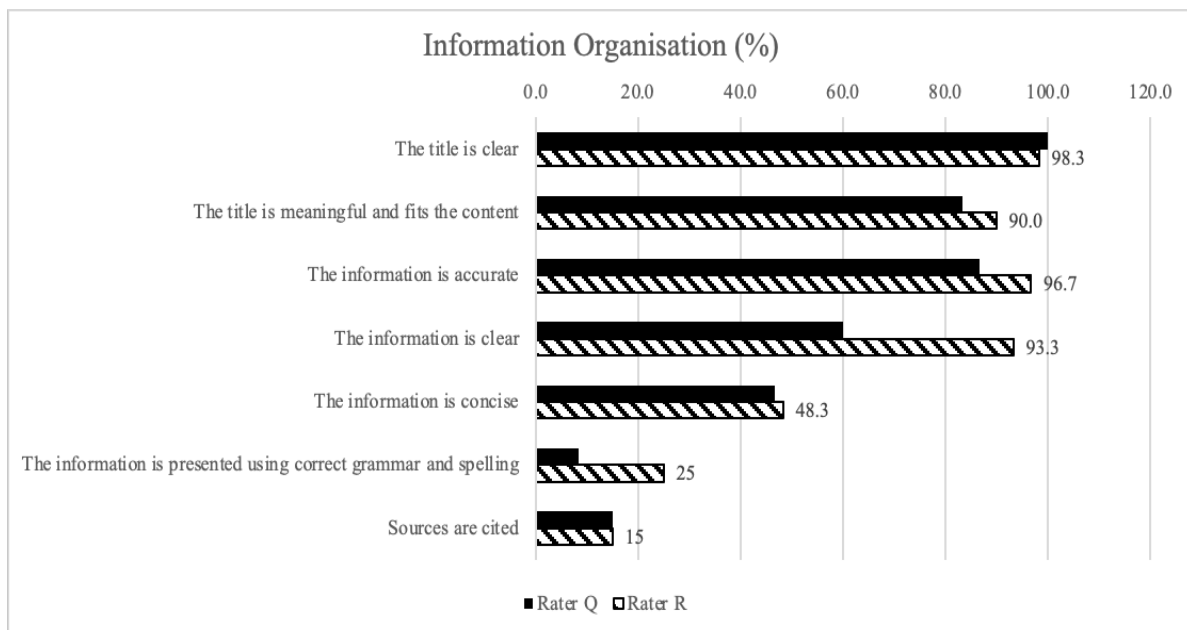
The findings indicated that the raters' overall view of the title of the documentaries as very clear, which is indicative with the high percentage of agreement between the raters. Both raters also found the title to be meaningful and fit the required content. The information provided on the digital infographics was also found to be accurate with both raters giving the rating of more than 80%. This suggests that the titles used by students were able to effectively convey the intended message and resonate with the intended audience. The positive response to the title suggests that it effectively captured the essence of the content presented in the infographics, enabling participants to quickly grasp the main idea. These findings highlight the importance of a well-crafted title in enhancing the overall effectiveness of digital infographics.

Even though both raters rated that all students provided a clear title, there is a significant contrast between both raters on the clarity of information in the infographics. Further investigation found that both raters have different interpretations when it comes to the clarity of the information. Rater Q preferred to have a more straightforward layout, while Rater R preferred to have supported visuals to support the information. Therefore, more calibration discussions are required to enhance consistency in the evaluation rating criteria. It was also found that both raters were in agreement that the information provided was not exactly concise, with recorded ratings below 50%. This indicated that students still have issues with summarising and prioritising significant information. Both raters also found that the information presented by the students contained grammar and spelling errors, which indicated that further emphasis needed to be given in this area. Last but not least, the study also identified that the sources of the documentary and information were hardly cited, given that both raters gave the item a 15% rating. Therefore, it can be concluded that many digital infographics lacked citations, a component that is essential for maintaining academic integrity.

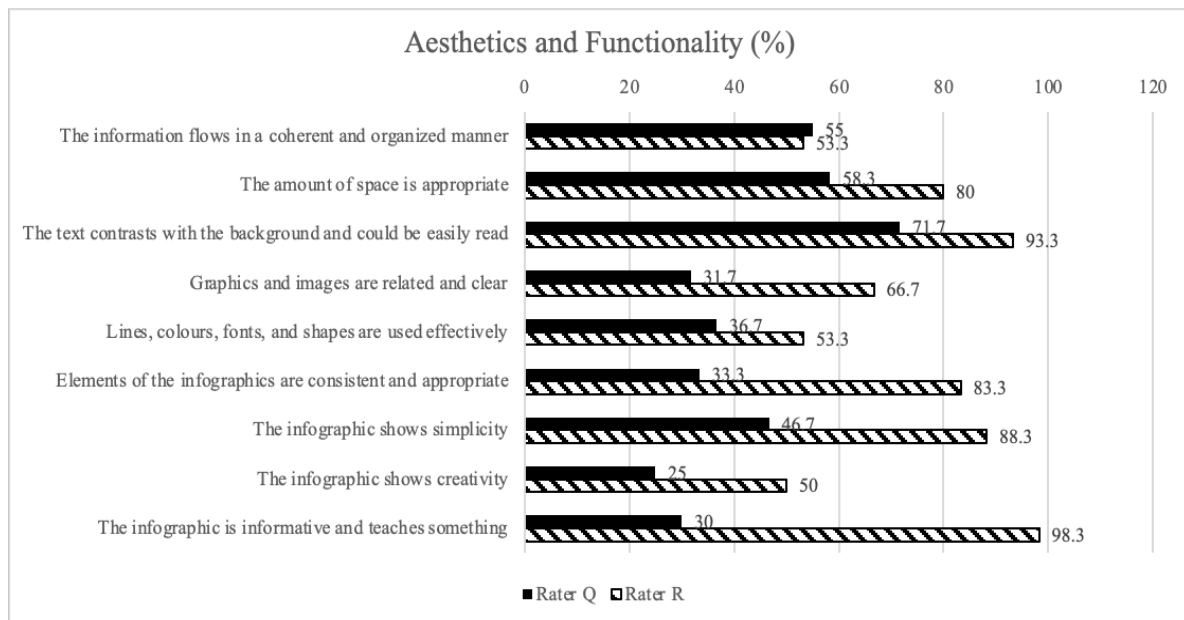AESTHETICS AND FUNCTIONALITY



FIGURE 5. Aesthetics and Functionality

The findings of this study found that both raters rated 55% and 53.3% on whether the flow of information in the infographics was observed to be coherent and organised. This suggests that while some students succeeded in presenting information in a logical and structured manner, others might need further assistance. An organised structure of infographics would further enhance the overall user experience, as it enables users to easily navigate through the visual elements and locate specific information. The study also found that the space utilisation in the text was deemed suitable, as it neither appeared overcrowded nor excessively vacant. Moreover, the readability of the text was found to be high, with the content being easily comprehensible to the readers.

However, there were significant contradictory rater evaluations in terms of the use of graphics and images, elements of infographics, simplicity of infographics, creativity of infographics, as well as the functionality of the infographics. This demonstrated that raters had varied perspectives and preferences regarding the use of digital infographics among students. For instance, on item 'elements of the infographics are consistent and appropriate', Rater Q provided 33.3% of the rating while Rater R provided 83.3% of the rating. Further investigation revealed that Rater R prioritised visual consistency, while Rater Q stressed the importance of content features. The contradiction is also consistent with the item on whether the infographics showed simplicity and creativity. Again, Rater R preferred the use of vibrant colours and graphics, whereas Rater Q preferred a more minimalist design approach. Also contributing to these aesthetic distinctions is the fact that the quality of an infographic can vary based on its subject, audience, and purpose. Effective infographics for one audience may not be effective for another. The noticeable contrast in both raters' viewpoints may prompt further discussion into the reasons that shape teachers' unique perceptions and evaluations, showing how subjective it is to evaluate design aspects. Examining the specific criteria and factors used by each rater could offer significant insights into the detailed process of evaluating graphic consistency and appropriateness. These results highlighted the significance of improving assessment criteria and promoting a common understanding among teachers in the language classroom, which will lead to more consistent and reliable evaluations in the future.

It can also be concluded that students who are designing an infographic need to take into consideration the audience that they are aiming for. It is essential to employ a variety of visualisations, as these will help to maintain the audience's interest in the infographics (Tarigan & Listyani, 2021). Receiving feedback from others like peers and instructors is also crucial, as this will aid the students in identifying areas in which they can make improvements (Arlwele, 2017; Khan, 2021).

## HOW TEACHERS CAN HELP STUDENTS USE DIGITAL INFOGRAPHICS IN CLASSROOM DISCOURSE

The findings of the study indicated that there are many ways teachers can help students use digital infographics in classroom discourse. Using thematic analysis, the researchers have identified areas for improvement based on the analysis conducted. Table 1 shows the summary or the areas of improvement of the digital infographics that corresponded to the teaching strategies that can be utilised by the teachers.

TABLE 1. Summary on areas for improvements and teaching strategies to be used

| | Areas for Improvement | Teaching Strategies to be used |
|---|---|---|
| Grammar and spelling errors | Majority of the digital infographics lacked correct grammar and punctuation, indicating a lack of language proficiency. | Incorporate detailed lessons on grammar and writing skills. This can include grammar exercises, spelling practices, and written work feedback (Asadnia & Atai, 2022) |
| Limited citations | Many digital infographics lacked citations, which are essential for maintaining academic integrity | Show students how to credit sources. Discuss numerous citation forms, give examples, and stress on academic integrity (Fazilatfar et al., 2018; López Cupita & Puerta Franco, 2019). |
| Lack of organisational cohesiveness | Some infographics lacked organisation coherence. The audience may have difficulties to comprehend the intended message | Help organise and structure information. Teach clear headings, bullet points, and logical thought flow may be included (Ju Qing & Zi-yan, 2015). |
| Inappropriate use of space | Some digital infographics did not utilise space appropriately, which can result in overcrowded or sparse layouts, influencing the infographics' appeal and readability. | Provide timely feedback and opportunities for revision. The feedback can concentrate on enhancing coherence, organisation, and space utilisation (Patti, 2015; Zou & Qi, 2020). |
| Inconsistency in design elements | Lines, colours, fonts, and shapes were utilised inconsistently. This can create digital distractions and reduce the infographics' overall visual appeal and efficacy. | Introduce design principles and stress the significance of visual element consistency. This includes colour schemes, font selection, and the application of shapes and lines to maintain uniformity (Khan, 2021). |

The first area for improvement identified was with regards to the grammar and spelling errors. majority of the digital infographics submitted by the students lacked correct grammar and punctuation, which also indicated lack of language proficiency. Therefore, teachers should incorporate detailed lessons on grammar and writing skills. As suggested by Asadnia and Atai (2022), grammar and writing lesson plans can include grammar exercises, spelling practices, and written work feedback. Students also need to be aware that having errors in grammar and spelling in their infographics would make their presentation appear amateurish and could distract readers. However, an appalling finding in the study conducted by Deckert (2021) showed spelling errors in subtitles were deemed as not serious even there were 20 typos in a 14-minute film fragment. Nonetheless, the judgement of unambiguous language deficiencies should not be taken lightly as this may affect the comprehension of the viewers.

The second area that needed improvement was limited use of citations. The missing citations in the infographics showed that the students are less aware of the academic integrity of using others' sources and deeming them as theirs. Some of the submitted infographics included citations which means that the students have been exposed to the importance of citing others' works. Therefore, it is suggested that teachers show students how to credit sources by discussing various citation forms, providing more examples of citations, and increasing awareness of plagiarism (Fazilatfar et al., 2018; López Cupita & Puerta Franco, 2019).

The third area that was identified for improvement was lack of organisational cohesiveness. When transferring the information from the documentary to the infographics, the lack of experience in identifying what is important to be included in the infographic directly affects the cohesiveness of the information. Thus, taking into consideration that the students need to be helped in organising and structuring the information, Ju Qing and Zi-yan (2015) suggested that teaching

clear headings, bullet points, and logical thought flow should be highlighted. This will aid the students in elevating their information transfer skills.

Another area that needs improvement is the inappropriate use of space. Some submitted infographics which did not utilise the space appropriately, which affected their appeal and readability. This is because when the students have weak language proficiency, they are unable to write concise sentences, and their limited experience in transferring information might results in problems such as an overcrowded and sparse layout. For a better layout in digital infographics, the teacher should provide timely feedback and opportunities for revision (Patti, 2015; Zou & Qi, 2020). The feedback can focus on enhancing coherence, organisation, and space utilisation. In addition, it is also crucial for the students to meet the timeline for preparing the infographics, as failure to do so results in no feedback being received.

The last area for improvement would be the inconsistency in design elements. Poor utilisation of lines, colours, fonts, and shapes contributes to the inconsistency of design elements. This creates digital distractions and reduces the infographics' overall visual appeal and efficacy. Another element that mitigates the consistency is the use of pictures taken from the videos that are irrelevant to being included in the infographic. This happens when the students do not understand the storyline of the clip and do not know what meets the viewers' expectations and requirement of task. Hence, introducing the design principles and stressing the significance of visual element consistency should be highlighted by the lecturers (Khan, 2021). This includes colour schemes, font selection, and the application of shapes and lines to maintain uniformity.

## PROPOSED DIGITAL INFOGRAPHICS INFORMATION TRANSFER MODEL (DITRAM) FOR ACADEMIC DISCOURSE IN LANGUAGE CLASSROOM

Taking into consideration the previous findings of both research questions, this study proposes a Digital Infographics as an Information-Transfer Model (DITRAM) for academic discourse in the language classroom.

TABLE 2. Digital Infographics Information Transfer Model (DITRAM) for academic discourse in language classroom

| Stages | | Discourse Strategies |
|---|---|---|
| **1) Planning** | a) Introduction to digital infographics | - Provide an overview on the use of digital infographics, its interactivity and multimedia elements<br>- Promote creativity and critical thinking |
| **2) Designing** | a) Topic selection | - Encourage students to select themes related to their personal interests |
| | b) Research and information gathering | - Assist students in conducting research for accurate and credible information<br>- Stress on the importance of proper citation. |
| | c) Layout presentation and visual elements | - Introduce the idea of storyboarding to organise information<br>- Identify design tools or software to create digital infographics<br>- Provide directions on font selection, layout, and colour schemes |
| | d) Language check | - Provide the evaluation rubric with students beforehand for transparency<br>- Review grammar and other common errors in language<br>- Provide constructive feedback and opportunities for revision |

| Stages | | Discourse Strategies |
|---|---|---|
| **3) Sharing** | a) Class presentation and peer interaction | - Schedule interactive presentations where the presenters can engage with attendees<br>- Offers a personalised interactions and informal setting<br>- Encourage one-on-one or small group interactions and discussions for direct feedback |
| **4) Reflecting** | b) Self-reflection and revision | - Ask students to reflect on their learning experiences<br>- Adjust the teaching model based on student feedback and learning outcomes |

The table above demonstrates how DITRAM could achieve the objectives of enhancing teaching and learning in the language classroom through the utilisation of digital infographics. When it comes to incorporating strategies that correspond to each stage, the stages of planning, designing, sharing, and reflecting are well suited for doing so. As a consequence of this, student engagement and critical thinking will be strengthened. Students may also acquire specific skills from the components of discourse competency such as linguistics competence (vocabulary, grammar and syntax), rhetorical competence (argumentation and organisation) and even interactive competence (paralinguistic features and non-verbal communication). These dynamic skills can be developed over time as a result of being exposed to variety of communicative contexts. Thus, significant improvement in the strategies would also imply that DITRAM is effective for developing academic language skills through a guided multi-stage model.

The proposed DITRAM model may be particularly well-suited for explaining the fundamentals of a complicated topic or subject. It has the potential to enhance learning by establishing patterns, processes, connections, and distinctions. Students are typically attracted to visually presented information that is perceived as concise and visually appealing. Thus, the adaptation of digital infographics would help to break down large chunks of information into manageable pieces, making them more accessible to a wider audience. After becoming acquainted with the DITRAM model, students (and even teachers) could combine elements of text, image, video, chart, diagram, and others to create digital infographics that are engaging and insightful. Overall, this will lead to more interaction, participation, and engagement among the students and their peers.

In terms of its social implications, DITRAM indicates a shift in academic work culture. By incorporating DITRAM for deep and surface reading, it could help both students and teachers to affectively understand the educational contexts. This is achievable as digital infographics are used to explain, highlight, or enhance text-based information. The strategies involve students capturing attention, conveying information, and increasing data retention. As a result, DITRAM lets students to better comprehend the main idea and the supporting details without overwhelming them with excessive information. Students could also explore new vocabularies together and reinforce what they already know.

CONCLUSION

To summarise, the study has shed light on the use of digital infographics and their role as an information-transfer model for academic discourse. In particular, the study has emphasised on the utilisation of data and visual communication to simplify complex concepts. Through the utilisation of digital infographics, teachers can establish an environment that encourages students to engage in meaningful conversations, collaborate with their peers, and enhance their ability to communicate effectively.

The study is of particular significance not only because it investigates the potential of digital infographics to enhance language learning experiences and foster classroom discourse, but also because it proposes Digital Infographics as an Information-Transfer Model (DITRAM) as a framework for guided discourse strategies. This distinguishes the study from prior research that has been conducted in this area. The implementation of DITRAM is significant as it can engage students and promote active learning, improve information organisation and presentation, facilitate collaboration and peer learning, and, most importantly, promote language development, and self-reflection for classroom discourse. The formation of such model can be considered as part of classroom innovation that has the capacity to impact students by providing opportunities to engage in classroom learning experiences (Wan Najmiyyah et. al., 2022).

As technology continues to evolve, there are numerous potential areas for future research that can be explored. Future studies could investigate the potential benefits of incorporating digital infographics into educational materials and environments. Additionally, it would also be insightful to explore the impacts of peer and group discussions in the context of digital infographic presentations. The exploration and impacts of different multimodal learning experiences such as the use of interactive simulations, audio and visual elements and videos on students' retention and comprehension of information in classroom learning could also be explored further. It is hoped that by evaluating the effectiveness of the Digital Infographics as an Information-Transfer Model (DITRAM) across various educational settings could also provide valuable findings to be discussed.

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Wan Najmiyyah Wan Md Adnan (Corresponding author)
Academy of Language Studies
Universiti Teknologi MARA Terengganu
Kampus Dungun 23000 Dungun, Terengganu, Malaysia
Email: wannajmiyyah@uitm.edu.my

Norhayati Husin
Academy of Language Studies
Universiti Teknologi MARA Terengganu
Kampus Dungun 23000 Dungun, Terengganu, Malaysia
Email: norhayatih@uitm.edu.my

Nooryuhanis Hashim
Academy of Language Studies
Universiti Teknologi MARA Terengganu
Kampus Dungun 23000 Dungun, Terengganu, Malaysia
Email: nooryuhanis@uitm.edu.my

Roszainora Setia
Academy of Language Studies
Universiti Teknologi MARA Terengganu
Kampus Dungun 23000 Dungun, Terengganu, Malaysia
Email: roszainora@uitm.edu.my