CHAPTER I
INTRODUCTION

1.1 Background

In the digital era that increasingly dominates daily life, a sedentary lifestyle has become a worrying global phenomenon, especially among Generation Z, who were born between 1997 and 2012 and grew up as digital natives (Kamil & Laksmi, 2023). According to the Global Status Report on Physical Activity (Organization, 2022) published by the World Health Organization (WHO) in 2022, more than 80% of adolescents globally do not reach the recommended level of physical activity. Along with this phenomenon, the intensity of gadget use in Generation Z tends to be high and lasts for a long duration every day. This is supported by the results of a questionnaire conducted by the author, namely, as many as 55.5% of 90 respondents admitted to using gadgets for more than 7 hours per day, which shows the high exposure to screen activity in the daily lives of Generation Z.

The long duration of using this gadget has the potential to cause various physical problems, especially when it is not balanced with an ergonomic posture. Musculoskeletal disorders due to the use of gadgets are generally influenced by several factors, including improper sitting positions, the habit of bowing your head for a long time, repeated use of hands and wrists, and lack of stretching activities. These factors often occur simultaneously and repeatedly, increasing the risk of physical complaints. A study at the Mataram Health Polytechnic (2023) found that most teenagers and college students experience neck pain complaints related to the long duration of using gadgets. The use of the device for more than 2 hours per day is often accompanied by a forward-leaning head posture and unergonomic sitting, which has the potential to increase the risk of musculoskeletal disorders.

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than 2 hours per day is often accompanied by a forward-leaning head posture and unergonomic sitting, which has the potential to increase the risk of musculoskeletal disorders.

The impact of these habits can be felt in the form of mild to moderate musculoskeletal disorders. Based on the results of the questionnaire, most of the 90 respondents reported experiencing complaints in the form of pain in the neck (65.6%), pain in the shoulder (42.2%), back pain (40%), and tingling in the hands (51.1%) felt during or after using the gadget. Although these complaints are not classified as a chronic disease, the impact is functional and can interfere with comfort and daily activities if they continue to recur. This is also supported by other studies that poor posture habits in the younger generation increase the risk of developing neck and lower back pain later in life by up to two times compared to those who have ergonomic postures (Alhammad et al., 2024).

This was then strengthened by the results of an interview with an orthopedic specialist who stated that musculoskeletal disorders due to the use of gadgets such as wrong posture habits and static positions for a long time can cause complaints of neck pain, stiff shoulders, sore back, wrist pain, and changes in posture if not prevented early. Proper education is considered important to help Generation Z understand the limits of the body's capabilities and prevent injuries before problems develop into more complex. Long-term investment in prevention through digital education is crucial to reducing economic and social burdens.

The low awareness of Generation Z on the importance of ergonomic posture is a major challenge in preventing this problem. Lack of understanding and the habit of maintaining correct posture exacerbate this condition. The results of the questionnaire showed that 58.89% of 90 respondents had only heard information about correct posture without an in-depth understanding, while 4.44% of 90 respondents stated that they did not know how to maintain correct posture. This condition indicates a gap between exposure to information and proper understanding that can be applied in daily life.

This condition is problematic considering the low health literacy of the Indonesian public, this is based on UNESCO data quoted from komdigi.go.id (2020), Indonesia ranks second from the bottom in the world literacy level, with a very low percentage of people's reading interest of only 0.001%, so a more visual and interactive communication strategy is needed so that messages can be received without having to read a lot of text.

To overcome this problem, the selection of motion graphic media emerged as the right solution because of its ability to convey complex information dynamically and engagingly,

which is in line with the communication style of Generation Z. Motion graphics, as a form of graphic animation that combines visual, text, and sound elements, have been shown to be effective in increasing higher understanding and retention of knowledge (Ahsani Kafiati, Ratnawati, 2025). In addition, motion graphics allow the visual presentation of the concept of cause and effect of posture, where the negative impact of musculoskeletal issues, especially neck, shoulder, back, and hand pain, can be illustrated through intuitive animations, thereby reducing the audience's resistance to health topics that are often considered boring. This scientific argument is supported by findings (Palma Juanta et al., 2025) that recommend animated digital media for preventive health campaigns, due to its effectiveness in reaching young populations who avoid long, verbal content. Thus, motion graphics are not only innovative but also cost-effective, making them ideal for large-scale educational production in developing countries like Indonesia.

In addition, the lack of integration of visual communication design in ergonomic health issues can be seen from the lack of design that combines the principles of graphic design with health science, where few works have explored motion graphics as a specific preventive tool for musculoskeletal neck, shoulders, back and hands. Another gap is the lack of a cultural contextual approach, where ergonomics education in Indonesia is still general without adjusting to the urban lifestyle of Generation Z which is dominated by e-learning and remote work. As a result, this research is here to fill this gap by focusing on motion graphics that are specifically designed for the target audience.

The relevance of Generation Z's very close lifestyle to digital media further strengthens this urgency, where most of them consume educational content through visual platforms such as YouTube or Instagram, so that media such as motion graphics can be an effective gateway to form healthy micro-habits. Without immediate intervention, this phenomenon has the potential to exacerbate intergenerational health inequalities, where Generation Z, who should be innovative, is hampered by early physical problems. This condition shows the urgency to conduct innovative and contextual educational media design research in order to bridge the gap between low health literacy and the digital media consumption style of Generation Z. Therefore, this research offers a new approach through motion graphic media that is visually and narratively designed to instill ergonomic posture awareness more effectively.

The novelty of this research lies in the development of the content and scope of musculoskeletal health education materials presented through motion graphics. Based on

an existing study on Kompas TV's motion graphic video, the educational material presented is still limited to discussing neck pain due to the use of gadgets, even though it has been supported by clear visuals and a flow of information. This study develops this approach by presenting a more comprehensive material, not only discussing neck pain, but also other musculoskeletal complaints commonly experienced by Generation Z, such as pain in the shoulders, back, and hands. The expansion of the scope of this material is supported by more dynamic animation, the use of voice over as a message reinforcement, and a more flowing and easy-to-understand storytelling approach. In addition, educational messages are packaged through the concept of micro-habits or small habits, so that behavior changes are conveyed in the form of small steps that are realistic and relevant to the audience's daily lives. Thus, the novelty of this research focuses on increasing the effectiveness of education through the presentation of musculoskeletal material that is more comprehensive and in accordance with the needs of Generation Z.

Based on the above background, the purpose of this study is to design and develop an educational motion graphic entitled "Designing Musculoskeletal Health Educational Media Due to the Use of Gadgets for Generation Z Through Motion Graphics" by integrating visual approaches, the concept of small habits, and the design principles of engaging visual communication. Through this process, the research aims to fill the gap in digital health education, increase awareness and healthy behaviors among Generation Z, and provide innovative models that can be widely adopted for the prevention of ergonomics problems in society.

1.2 Problem Identification

Based on the background description that has been submitted, the formulation of problem identification in this study is as follows:

1. Generation Z, who were born between 1997 and 2012, grew up as digital natives who are very familiar with the use of digital gadgets and technology (Kamil & Laksmi, 2023). Their lifestyles tend to be sedentary, with the duration of physical activity well below the recommended standard. Data from the World Health Organization (WHO, 2022) shows that more than 80% of adolescents globally do not reach the recommended level of physical activity. This condition raises concerns because a sedentary lifestyle from an early age can be a risk factor for the emergence of non-communicable diseases and long-term health problems.

2. Based on data from the results of the questionnaire, most respondents reported experiencing musculoskeletal complaints in the form of neck pain (65.6%), shoulder pain (42.2%), back pain (40%), and tingling in the hands (51.1%) felt during or after using gadgets. This is also supported by research at the Mataram Health Polytechnic (2023), which found that students and adolescents who use gadgets for more than two hours per day tend to lean their heads forward and engage in unergonomic sitting, which increases the risk of musculoskeletal disorders of the spine. This condition not only impacts physical health, but also decreases productivity and long-term quality of life.
3. Another problem that arises is the low awareness of Generation Z on the importance of ergonomic posture, based on the results of data from the questionnaire, most of the 90 respondents, namely 58.89%, admitted that they had only heard the information without a deep understanding, while 4.44% of respondents stated that they did not know how to maintain the correct posture. In addition, as many as 86.7% of respondents admitted that they had difficulty maintaining good posture when using gadgets, These findings indicate a gap between the knowledge possessed by the respondents and the practice of applying it in daily life.
4. The literacy of Indonesian society is relatively low, making conventional educational messages often ignored or difficult to understand. Based on UNESCO data quoted from komdigi.go.id (2020), Indonesia ranks second from the bottom in the world literacy rate, with a very low percentage of people's reading interest, which is only 0.001%.
5. Based on the results of interviews with orthopedic specialists, body positions that are not ergonomic or maintained statically for a long time do not immediately cause complaints, but in the long term can trigger neck pain, shoulder stiffness, back pain, and posture changes that can reduce the quality of human resources in the future.

1.3 Problem Formulation

Based on the problems that have been identified previously, the formulation of the problem in this study is as follows:

How to design motion graphics as a musculoskeletal health education medium due to the use of gadgets for Generation Z?

1.4 Problem Limitations

To obtain the scope of the research, the limitations of the problem in this study are set as follows:

1. This study is limited to Generation Z aged 20-28 years who actively use gadgets for more than 2 hours per day.
2. This study only emphasizes musculoskeletal problems related to neck, shoulder, back, and hand pain due to unergonomic posture when using gadgets and does not address other musculoskeletal disorders or common chronic diseases.
3. The media design is motion graphics based on visual, text, and audio animations, with a short duration of about 1-3 minutes that can be broadcast through digital platforms such as YouTube or Instagram. Conventional media such as posters, leaflets, or non-animated videos were not included in the study.

1.5 Purpose of Planning

The study is designed to achieve the following:

1. Designing an educational motion graphic about musculoskeletal health due to the use of gadgets in Generation Z.
2. Presenting health messages in a visual style that is engaging, concise, and appropriate to the character of Generation Z.
3. Increase the audience's understanding and awareness of the importance of ergonomic posture through an interactive and easy-to-understand visual approach.
4. Presenting innovative digital educational media as a new alternative in health communication.
5. Provide examples of media models that can be used for ergonomics education campaigns more widely in the community.

1.6 Benefits of Compounding Results

The following are the expected benefits of this research, both for the public, the authors, and related institutions or fields of science.

1. Benefits for the Society

a. Increase Generation Z's awareness of ergonomic posture and the risk of musculoskeletal disorders due to the use of gadgets.

b. Help form healthy habits through the concept of micro-habits or small habits

c. Providing educational media that is easily accessible and interesting, so that it can be widely applied in schools, campuses, and the general public.

2. Benefits for Authors

a. Providing practical experience in designing motion graphic-based digital educational media.
b. Improve the ability to integrate the design principles of Visual Communication with health sciences.
c. Expand insights into design research focused on digital native audiences (Generation Z).

3. Benefits for Institutions/Sciences

a. It is a reference for design research that focuses on digital native audiences (Generation Z).
b. Contributing to the development of visual communication design studies and digital health education, especially the use of motion graphics.
c. Provide a scalable and adaptable educational media model for future health education campaigns.

1.7 Planning Framework

The following is a design framework that is compiled as a systematic flow of thinking for designing motion graphic educational media.

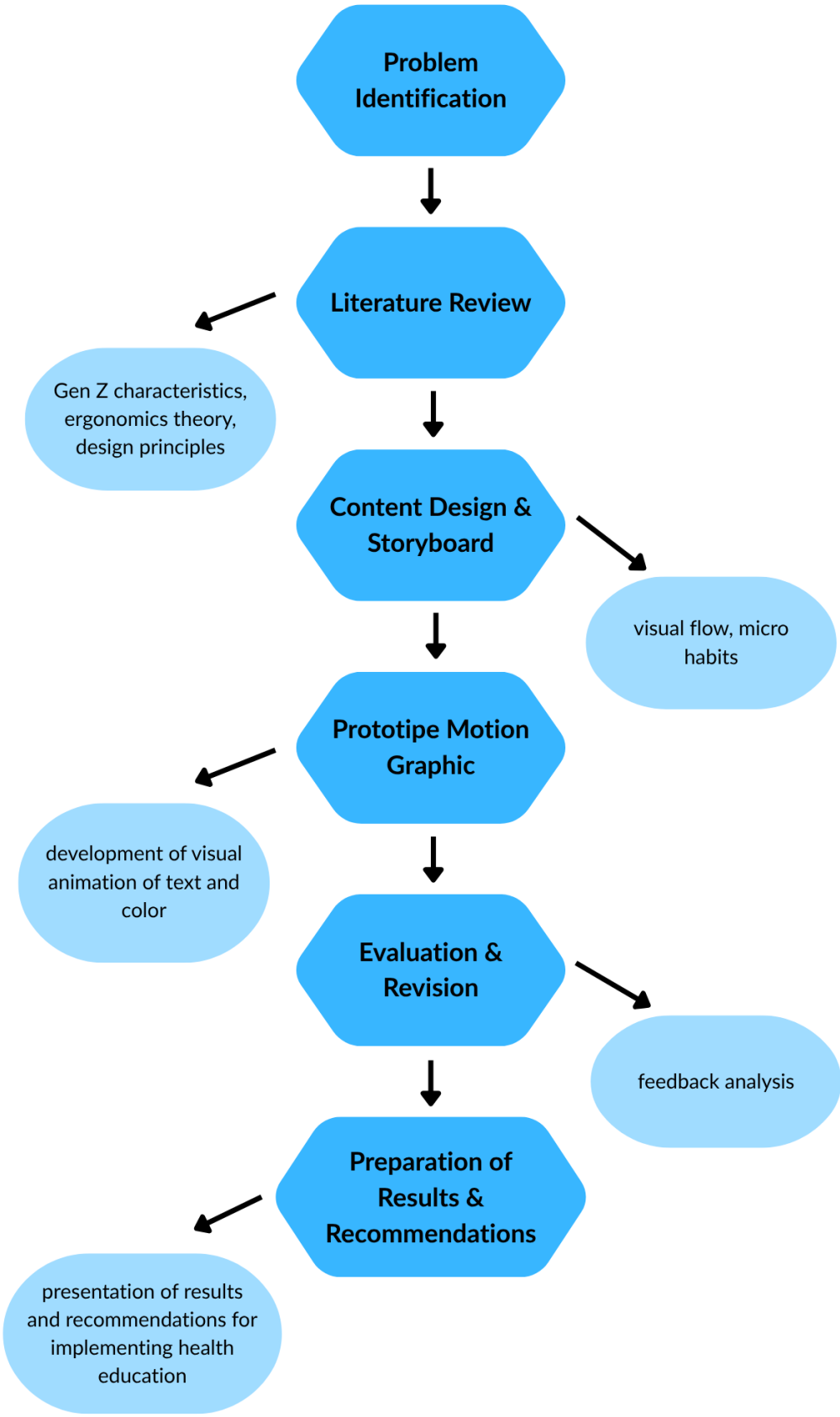

Figure 1. 1 Planning Framework

(Source: Personal Documents)