

DESIGNING INTERACTIVE ILLUSTRATION BOOK FOR TEENAGERS: EFFORT TO PREVENT OBESITY DUE TO EXCESSIVE SUGAR CONSUMPTION

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Abstract: *The increasing obesity rate among Indonesian adolescents, primarily due to excessive sugar consumption, is the reason why this research was conducted. The public's lack of awareness of the dangers of sugar and the limited availability of educational media that appeal to adolescents have prompted the need for new methods of conveying information. The purpose of this research is to create an interactive illustrated book that can be used as an educational medium to prevent obesity caused by excessive sugar consumption in adolescents. The method used is a qualitative approach by collecting data through interviews, questionnaires, observations, and literature studies. The book creation process is based on the results of an analysis of user needs and a study of visual styles that suit adolescent characteristics. The results show that interactive illustration media using augmented reality (AR) elements can increase adolescent engagement, understanding, and interest in learning about health issues. In conclusion, this illustrated book is not only a means of conveying information, but also a tool to encourage behavioral change towards a healthy lifestyle. The benefits of this research are to provide effective visual communication design solutions in adolescent health education and open up opportunities for the use of interactive media in conveying health messages more widely.*

Keywords: *Obesity, Sugar Consumption, Teenagers, Illustration Book, Augmented Reality, Health Awareness.*

INTRODUCTION

Obesity in teenagers has become a big problem for public health, especially because more young people are eating and drinking foods and drinks that have a lot of sugar. In Indonesia, more and more teens are becoming overweight or obese, and many of them don't fully understand how bad too much sugar can be for their health in the long run. This includes problems like diabetes, heart disease, and lower overall quality of life. The issue is most common among 13 to 15-year-olds, who are easily influenced by today's lifestyle trends, advertising, and online content that often encourage unhealthy eating habits.

In 2023, a survey by the Ministry of Education and Culture found that 50% of Indonesian children and teenagers consume sweet foods, and 62% consume sweetened drinks at least once a week. Data from the World Health Organization (WHO) in 2019 shows that many teenagers are unaware of the impact of excessive sugar consumption on obesity. The data shows that most children and teenagers consume sweetened drinks and foods daily and do not meet the recommended intake of fruits and vegetables. This increases the risk of obesity.

Awareness of the dangers of obesity among teenagers in Indonesia remains a challenge. Conventional media struggles to attract the attention of younger audiences, who prefer the interactive and engaging nature of digital media (Hasanah, 2025). One contributing factor is the lack of effective interactive media for conveying information on complex topics such as obesity. Media that can increase teenagers' knowledge needs to be developed through learning media that can provide real-life stimulation, containing moving images and sound elements, or what can be called interactive media. (Kurdanti, 2015).

Despite the availability of health campaigns, conventional methods of health education have proven to be less engaging for this generation, which is more responsive to interactive and visual-based media. Therefore, there is a growing need for educational tools that are both informative and appealing to teenagers. This study aims to address this gap by designing an interactive illustrated book enhanced with augmented reality (AR) features. The book is intended to educate teenagers about the risks of excessive sugar consumption and encourage healthier lifestyle choices. By integrating design, technology, and health education, this project proposes a creative solution that not only raises awareness but also fosters behavior change among teenagers.

RESEARCH METHOD

This research employed a qualitative descriptive approach to explore the design development of an interactive illustrated book aimed at raising awareness about the dangers of excessive sugar consumption and its relation to obesity among adolescents. The study focused on the process of designing visual communication media—particularly illustration, layout, typography, and interactive features—tailored to the characteristics and preferences of teenagers. The research also examined how design elements, when combined with augmented reality (AR), can enhance learning and engagement.

Respondents were selected using purposive sampling to ensure participants represented the intended user group. Data collection was carried out through several methods: (1) Observation of visual references and comparable products to identify design benchmarks; (2) Interviews with health professionals to gather accurate information on obesity and sugar consumption; (3) Questionnaires distributed to the

target audience to understand their media preferences, knowledge level, and behavior; and (4) Literature review to support theoretical and contextual foundations.

The collected data were analyzed using descriptive analysis to interpret qualitative responses and identify patterns in user needs and preferences. Insights from both users and experts were then synthesized to guide the iterative design process. This method ensured the resulting product was user-centered, contextually relevant, and pedagogically effective. The detailed methodological process enables replication in future research exploring educational media design using interactive illustration and AR.

RESULT AND DISCUSSION

Based on research results, teenagers lack sufficient awareness of the dangers of excessive sugar consumption, which can lead to obesity. Questionnaire results showed that most respondents regularly consumed sweet foods and drinks but were unaware of the long-term health risks, such as obesity, diabetes, and metabolic disorders. Teenagers are more interested in visual, interactive, and technology-based educational media. The majority of respondents stated that conventional educational media, such as textbooks, are less engaging and difficult to understand, while media that incorporates engaging illustrations and augmented reality (AR) are preferred and easier to understand.

The final product design is an interactive illustrated book entitled Sweet Trap, combining attractive visuals with educational content on sugar and obesity. The book features a balanced combination of textual explanations, character-based storytelling, infographics, and engaging illustrations. Augmented reality (AR) elements were added using video animations accessible via smartphone, designed to enrich user engagement and retention of information.

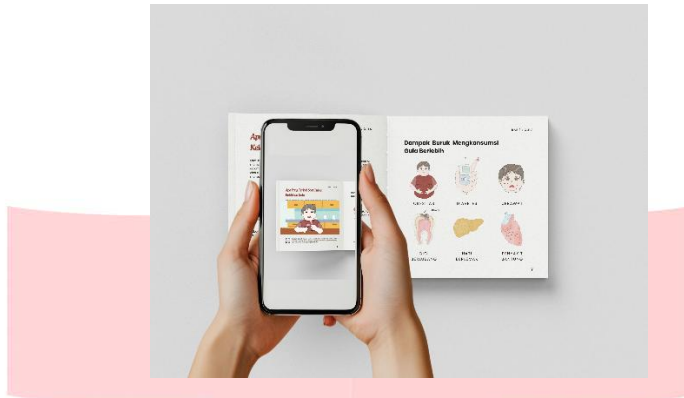


Image 1. Augmented Reality Feature
Source: Author's Personal Document, 2025

The use of AR media has proven effective in increasing knowledge about obesity risk factors, the importance of a healthy diet, and the negative effects of excessive sugar consumption. After participating in educational activities using this interactive book, most respondents showed positive changes in their knowledge and expressed a desire to reduce their sugar consumption. Despite its significant potential, AR media development faces challenges such as high production costs and the need for user guides to ensure seamless use. Therefore, strategies are needed to reduce production costs and provide user guides to ensure the learning experience remains enjoyable and easy to understand for teenagers.

CONCLUSION

From the results of data processing and analysis through observation, literature review, interviews, and questionnaires, it can be concluded that the increase in obesity symptoms in teenagers in Indonesia, especially in North Bekasi, is influenced by the habit of consuming foods and drinks that contain a lot of sugar. The main factors that cause this obesity problem are the lack of knowledge about the

negative impacts of consuming excess sugar, the lack of access to healthy food, and the lack of entertaining and interactive media to convey this information to teenagers.

The concept of designing an interactive illustrated book based on Augmented Reality as an educational medium for teenagers can increase their awareness of the dangers of consuming excess sugar and encourage teenagers to live a healthy life. Through an interesting and interactive narrative, which can motivate teenagers to start a healthy life and increase knowledge about obesity.

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