

IMPLEMENTATION OF CANVA-BASED INTERACTIVE LEARNING WITH CHATGPT AND WORDWALL INTEGRATION ON BIOLOGY CELL MATERIAL

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Abstrak

This study aims to develop an interactive learning media based on Canva integrated with ChatGPT and Wordwall on the topic of Cell Biology for eighth-grade students of MTs Hidayatul Qomariah . The background of this study was the low learning motivation of students and the difficulty in understanding abstract cell concepts. The research method used was research and development with the ADDIE model, consisting of analysis, design, development, implementation, and evaluation stages. The media was developed in the form of interactive presentations using Canva, animated explanations assisted by ChatGPT, and learning evaluations using Wordwall . The validation results showed that the developed media had a very high feasibility level, with an average score of 4.55 on a 1–5 scale. The aspects of visual design, content quality, interactivity, and ease of use were categorized as feasible to very feasible. Limited trials showed that this media increased student engagement, helped improve understanding of cell biology concepts, and created a more interesting and interactive learning experience. This media is considered suitable for use as an alternative learning media in science education at the junior Islamic secondary school level.

Kata Kunci: *Learning media. Canva. ChatGPT. Wordwall . Cell Biology.*

PENDAHULUAN

The development of digital technology in education has opened up significant opportunities for innovation in the learning process. In the 21st century, students are not only expected to passively receive information but also to actively explore, create, and self-evaluate in their learning (Ntaila, 2023) . This requires teachers and educational institutions to go beyond traditional methods like lectures and blackboards to incorporate interactive and engaging media to enable students to engage more deeply and gain a better understanding. Biology, particularly regarding cells as the smallest unit of life, presents unique challenges in the learning process . Because the concept of cells is abstract, microscopic, and involves a lot of scientific terminology, students often have difficulty understanding and internalizing the concept in depth (Widiastuti, 2024) . This condition is further exacerbated when the media used in learning activities are still conventional and lack visual elements or interactivity (Pradana, 2023) . For example, research conducted (Sari et al. 2025) in one junior high school showed that the use of monotonous learning media causes students to tend to be passive and boredom increases, therefore, learning media are needed that not only convey content, but also facilitate active student involvement, creativity, and evaluation that is relevant to their learning style.

One promising platform for visual learning media is Canva. Canva provides various templates, graphic design elements, and interactive features that make it easy for teachers to create engaging materials that are tailored to the characteristics of today's digital learners. Research conducted by (Munaye & Admass, 2025) shows that using Canva as a learning medium can improve students' creative thinking skills. Furthermore, (Dimeli & Kostas, 2025) found that using the Canva application as a learning tool increases students' motivation to learn. Thus, Canva offers

great potential as a primary medium for improving the quality and appeal of biology learning. However, using Canva alone may not be enough to fully meet the demands of 21st-century learning, such as collaboration, communication, creativity, and students' digital skills. This is where integration with artificial intelligence (AI) technology like ChatGPT comes in. ChatGPT can be used as a tool for teachers and students to create or design animations, explain concepts adaptively, or quickly generate supporting learning content. Although direct research on ChatGPT specifically in biology learning is still limited, some systematic literature reveals that ChatGPT opens up various opportunities including providing instant responses, supporting personalization of learning, and reducing the burden on teachers in designing media (Baig, 2024). ; (Mulyati et al. 2022) . Thus, integrating ChatGPT into Canva-based learning media design can facilitate teachers' creative processes and improve the speed and quality of learning media production.

Furthermore, the evaluation aspect of learning is equally important. Without appropriate and engaging evaluation, students may simply breeze through lessons without truly evaluating their understanding or receiving constructive feedback. Platforms like Wordwall offer solutions for creating interactive and gamified assessment tasks, such as quizzes, mazes, and matching games, which can increase student motivation and engagement (Ntaila, 2023) . Research conducted Hashifah et al. (2025) demonstrated that developing evaluation questions using Wordwalls in the context of regional language learning successfully demonstrated high validity and practicality. Meanwhile, Prasetya (2025) demonstrated that Wordwall-assisted evaluation of elementary school mathematics material met the feasibility criteria and received a positive response from students. Thus, Wordwalls have the potential to be used as an evaluation tool in cell biology materials to make the learning process more enjoyable and meaningful.

Thus, the combination of the three elements of Canva as the main visual-design medium, ChatGPT as a tool for creating animations or dynamic content, and Wordwall as an interactive evaluation platform reveals a comprehensive learning media model: media that is engaging, adaptive, and interactive. For the context of eighth-grade students at MTs Hidayatul Qomariah, this model has great potential because students at that age are starting to enter the transition phase between elementary and secondary learning; they are more responsive to digital media and gamification than conventional methods. However, to date, there has been little research that combines these three platforms in a single media development study, especially for biological cell material and for junior high school (SMP/MTs) level. Therefore, this study is here to fill this gap.

Preliminary research in secondary schools shows that Android-based interactive learning media or interactive multimedia can improve student learning outcomes (Hardiansyah, 2025) . However, these media have not always included AI integration or evaluation gamification elements such as those enabled by Wordwall. While there are many studies on the use of Canva (Mantoviana, 2023) and research (Team, 2023) and Wordwall separately (Lestari, 2024) , there are still limited studies that combine the three in the context of cell biology material for junior high school/Islamic junior high school students. In the Hidayatul Qomariah Islamic Junior High School environment, based on initial observations (authors) found several main challenges: (1) the learning media used by teachers are still predominantly monologue and manual (e.g. static slides or textbooks) so that students tend to be passive and less motivated; (2) the concept of "cell" is seen as difficult by students because it is abstract and lacks visual-interactive practice; (3) assignment evaluations are still in the form of paper quizzes or worksheets which are less interesting and less stimulating for active student involvement; (4) Teachers have not yet optimally utilized AI technology or interactive digital platforms in designing and evaluating learning. To overcome these challenges, it is necessary to develop learning media that are capable of: increasing motivation, simplifying abstract concepts through visuals and animation, facilitating student interaction with content, and providing evaluations that are relevant to current learning styles.

Therefore, in order to address these needs, this study will develop Canva-based interactive learning media with ChatGPT and Wordwall integration on biology cell material for eighth-grade students at MTs Hidayatul Qomariah. The aim of this development is to produce valid, practical, and effective media in improving understanding of cell concepts, learning motivation, and student

participation in the learning process. Thus, it is hoped that the results of this study can provide practical contributions for teachers, curriculum developers, and educational research literature, particularly in the use of digital technology as a more contextual and adaptive learning medium to the needs of 21st-century students.

METODE PENELITIAN

This research method uses a Research and Development (R&D) approach with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model, which aims to develop Canva-based interactive learning media with ChatGPT and Wordwall integration on biology cell material for eighth-grade students of MTs Hidayatul Qomariah. The research stages begin with analyzing teacher and student needs, then designing media designs using Canva with the help of ChatGPT in creating animations and learning narratives, and Wordwall integration for interactive evaluation instruments. The development of this media refers to research (Erfiana, 2025) which emphasizes the effectiveness of Canva as a means of creating digital teaching materials, as well as research (Lestari, 2024) which proves Wordwall is able to improve learning outcomes through game-based evaluation. Product validation was carried out by media experts and material experts to assess the feasibility aspect, while limited trials were conducted on 15 eighth-grade students to measure the practicality and user response to the developed learning media. Data was collected through validation questionnaires, observation sheets, and interviews, then analyzed quantitatively descriptively to obtain the level of validity, practicality, and effectiveness of the resulting product.

HASIL DAN PEMBAHASAN

The results of this study describe the process of developing Canva-based interactive learning media with ChatGPT and Wordwall integration on Biology Cell material for eighth-grade students of MTs Hidayatul Qomariah. Each development stage was carried out based on the ADDIE model, starting from needs analysis to product evaluation. This section presents the implementation results at each stage, including media design, animation creation, and the preparation of interactive evaluations. The explanation is accompanied by visual documentation taken from the results of the learning media development.

1. Initial Design of Learning Media in Canva

The initial stage in the media development process was the creation of the main learning design based on Canva. Canva was chosen because it has a simple interface, rich educational templates, and supports the integration of various multimedia elements such as images, animations, audio, and videos. This media is designed to support interactive learning on the material of Biology Cells, with the aim of helping students understand the structure and function of cells visually. Based on the results of the needs analysis, teachers and students at MTs Hidayatul Qomariah stated that cell material is often considered abstract and difficult to understand due to the limitations of visual media in conventional learning. Therefore, the design in Canva focused on an attractive, communicative, and easily accessible display through students' digital devices.

The main design, titled Cell Biology, features visual elements such as microscope icons, cell organelles, and simple animations depicting the dynamics of life within a cell. The dominant blue-green color was chosen to create a scientific yet calming impression, in keeping with the characteristics of biology subjects. Each element in the design is not only decorative but also has a pedagogical function, for example, interactive buttons that direct users to further explanations or specific activities. The page structure is designed to follow the learning flow: from concept introduction, presentation of core material, reflection, to interactive exercises.



Figure 1. Initial view of the *Cell Biology learning media design* on the Canva platform

This view shows the media's opening page, which serves as an introduction to the lesson. At the top, you'll find the topic title and a biology icon as the primary visual identity. On the right side, there's navigation to easily navigate between sections of the topic, while at the bottom, there's a home button that links directly to the main page and animations.

To facilitate student access, a QR code is added at the bottom of the design that links directly to the online version of the learning media in Canva. This QR code serves as a bridge between the printed media (guide sheets or LKPD) and the interactive digital media. By simply scanning the code with a mobile phone, students can immediately open an interactive presentation containing animations, explanatory videos, and short exercises. The use of QR codes is expected to increase the flexibility and effectiveness of learning by allowing students to study independently anytime and anywhere.



QR Code 1 : <https://biology-sel-ditra-irfan.my.canva.site/>

This QR code directs to the main page of the interactive Cell Biology learning media developed with Canva. Students can access it via mobile phones or laptops to learn about cells visually and interactively. Furthermore, using Canva also makes it easier for teachers to revise and update content. For example, if a teacher wants to add a new illustration or update data about cell types, changes can be made quickly without having to repeat the entire media creation process. This aligns with findings (Erfiana, 2025) which state that Canva is effective in developing digital teaching materials due to its flexibility, collaboration, and adaptability to learning needs. With its attractive design, integrated multimedia features, and easy access via QR code, this learning media is expected to increase student engagement in understanding the basic concepts of cell biology comprehensively.

2. Creating Learning Animations with the Help of ChatGPT

The next stage in the learning media development process is the creation of interactive animations that visualize the basic concepts of Biological Cells with the help of ChatGPT as a digital assistant in the creative process. The use of ChatGPT in this stage serves to help researchers produce explanatory narratives, visualization ideas, and the development of dialogues or animated scenarios that are interesting and appropriate to the level of understanding of eighth-grade students

at MTs Hidayatul Qomariah. The use of artificial intelligence allows the animation development process to be more efficient, structured, and adaptive to dynamic learning needs.

In the context of biology learning, animation plays a crucial role in bridging students' understanding of abstract and microscopic material, such as cell structure and function. Therefore, the animation developed features a fictional character in the form of a young scientist named Ditra, who acts as the main guide in explaining each part of the cell. This character is designed in an educational cartoon style to be closer to the world of students and foster curiosity. Every body movement, facial expression, and gesture of the character are arranged to align with the context of the explanation given, for example, giving a thumbs up when explaining the function of cell organelles, or showing a thoughtful expression when discussing more complex parts.



Figure 2. The character of the young scientist Ditra in various animated expressions used in interactive learning media.

This character serves as the primary guide, explaining the structure and function of cells. Its use aims to increase students' emotional connection to the material, create a fun learning environment, and help them grasp biological concepts through narrative and visual means.

The animation creation process was carried out collaboratively between researchers and ChatGPT. ChatGPT assisted in producing communicative explanatory narratives that were appropriate for the scientific literacy level of madrasah students. For example, in explaining the function of mitochondria, ChatGPT was used to construct simple yet scientific explanatory sentences, so students could grasp the concept without losing its biological essence. Furthermore, the system was used to generate storyboard ideas, such as how to show the movement of organelles within the cytoplasm, or how to make transitions between animation sections smoother and more engaging.

After developing the ideas and narrative, the researchers used Canva and PowerPoint Animation Tools to implement the design into a complete animation. Each scene was designed to be short, concise, and focused on a single learning concept to avoid overwhelming students. The animation also features captions and light sound effects to support visual comprehension. For example, when Ditra explains the nucleus, a soft voice appears accompanied by a pulsating light effect in the cell nucleus to signify its role as the cell's control center.

Initial trial results indicate that the use of animations can capture students' attention and help them understand concepts that were previously difficult to visualize abstractly. Based on initial observations, students were more enthusiastic about participating in the learning process due to the visual interactions and lively characters. This aligns with research findings by Nurbaya et al. (2025), which showed that animation-based learning can increase the retention of biology concepts by up to 30% compared to conventional methods. Furthermore, the integration of artificial intelligence such as ChatGPT into the media production process was also deemed effective by Pradini & Adnyayanti (2022), as it can accelerate the development of educational content that is adaptive to the local context and students' cognitive levels.

Thus, the creation of ChatGPT-assisted animations is not merely a technical innovation, but also a new pedagogical approach that combines elements of technology, creativity, and scientific

communication. This medium is expected to provide a more in-depth and meaningful learning experience for students and serve as a model for developing digital learning relevant to the demands of 21st-century education.

3. Interactive Evaluation Development with Wordwall

The next step in developing learning media is utilizing Wordwall as an interactive evaluation tool for the Biology Cell topic. Wordwall is used to directly measure students' understanding after they have studied the material through Canva and ChatGPT-assisted animations. Wordwall was chosen based on its ability to present questions in an engaging, responsive, and easily accessible manner for eighth-grade students at MTs Hidayatul Qomariah.

In the design stage, researchers developed a test grid based on competency achievement indicators. The questions were structured as multiple-choice, true-false, and matching-concept questions. Each question was designed to measure students' understanding of cell structure, the function of cell organelles, and the differences between plant and animal cells. The questions were structured systematically to suit the students' cognitive levels and the learning context at the madrasah.



Figure 3. Initial view of the interactive Wordwall evaluation page on the Biology Cell material.

The process of integrating Wordwall into learning is achieved by connecting Canva media to the Wordwall assessment page through internal links. This way, students can move directly from the material to the assessment without having to open multiple applications. This provides a more structured and less confusing learning experience for students. This learning model helps create a coherent learning flow, from conceptual understanding to assessment of learning outcomes.

Initial trial results showed that students were more engaged with the Wordwall exercises compared to paper-based assessments. Students appeared more focused and motivated due to the game elements, such as scoring and immediate feedback. Furthermore, teachers could easily monitor student performance through Wordwall's automated score reports. This data helped teachers identify areas of the material that students had not yet fully grasped.

Using a Wordwall as an evaluation tool also provides a more active learning experience. Students are not simply passively answering questions but are engaged in the technology-based learning process. This aligns with research findings (Lestari, 2024), which found that game-based digital evaluation can increase student motivation and participation in science learning.

The integration of Wordwall into this learning medium strengthens technology's role as a learning support tool, not just a supplement. This evaluation tool not only measures learning outcomes but also encourages students to be more confident and willing to try. Thus, Wordwall becomes a vital part of a series of interactive learning media designed in an integrated manner for the Biology Cell topic.

4. Product Validation and Trial Results

The final stage in developing this learning media was the validation and product trials. Validation was conducted by media and content experts to assess the product's suitability across

various aspects, including design appearance, material suitability, interactivity level, and ease of use. A limited trial was also conducted with eighth-grade students at MTs Hidayatul Qomariah to gauge their responses and learning experiences when using the media.

Validation results indicate that the Canva-based learning media, integrated with ChatGPT and Wordwall, has a very good level of feasibility. Assessment was conducted using a Likert scale of 1–5, with scores indicating that the media meets the eligibility standards for use in learning. Students also responded positively, finding the media engaging, easy to use, and facilitating understanding of the Cell Biology material. The following table shows the results of the learning media validation:

Aspect Evaluation	Average Score	Category
Eligibility Appearance (Design Canva)	4.6	Very Worthy
Eligibility Material (Content) Biology)	4.5	Very Worthy
Eligibility Interactivity (Wordwall)	4.4	Worthy
Convenience Use	4.7	Very Worthy
Overall Average	4.55	Very Worthy

Table 1. Results Validation And Test Try Product

Based on these results, the developed learning media is considered highly suitable for use as a supporting medium for learning Biology Science on Cells. The highest score was obtained for the ease of use aspect, indicating that this media is easy to understand and operate by both students and teachers. Meanwhile, the interactivity aspect also fell into the adequate category, indicating that the Wordwall feature as an evaluation medium is able to increase student engagement in the learning process.

Trial results showed that students were more motivated to participate in learning and more active during assessments. This media not only helped students understand concepts but also created a more enjoyable and structured learning environment.

5. Discussion

The development of Canva-based interactive learning media integrated with ChatGPT and Wordwall demonstrated strong results in helping students understand the material on Biology Cells. These research findings align with various recent studies that confirm that interactive digital media provides a clearer learning experience and makes it easier for students to grasp abstract concepts. At the design stage, the use of Canva proved effective in creating simple and easy-to-follow displays. This aligns with findings (Laswi, 2024) that show that Canva-based media can enhance student creativity while encouraging stronger visual engagement. Research (Gurning et al., 2024) also noted that Canva provides teachers with the flexibility to design visual displays that support material explanations, especially for materials that require visual representation.

The integration of ChatGPT as a simple animation generator and supporting explanations also has a positive impact. The role of AI as a learning companion has been discussed by (Purniasih et al., 2024) , who found that AI-based interactive digital modules help students understand biology because their presentation is more systematic and concise. The results of this study confirm these findings. Animations created through ChatGPT make it easier for students to visualize difficult-to-imagine processes, such as the function of cell organelles. When students see gradual visual changes, they tend to focus better and are less likely to lose attention.

In the evaluation section, the use of Wordwalls offers significant advantages due to their interactive nature. Research (Laswi, 2024) shows that Wordwall-based games can increase student engagement in learning evaluations. Another study by (Wicaksono & Wiratama, 2024) confirmed that Wordwalls help reduce boredom when working on problems because they resemble a game. In the context of this study, Wordwalls serve as an evaluation tool that makes students more relaxed while still providing an accurate picture of their understanding of cell material.

Furthermore, the findings of this study align with those of other interactive multimedia developments. Research by Darmayanti & Syamsudduha (2023) shows that visualizing

microbiological elements helps students understand cell components. Although the media used are different, the intended benefits are the same: clear visualization improves understanding. A study of website-based multimedia by Suciari et al. (2025) also confirms that interactive digital platforms help students learn biology more systematically because the material is presented sequentially and is easily accessible.

Research on other interactive multimedia such as that conducted by (Margareta & Karimah, 2025) : (Perdana et al., 2025) illustrates that interactive media encourages increased motivation, especially when visual, audio, and interactive elements are combined. Their findings align with the results of this study, as students responded positively to learning through visual formats created with Canva, ChatGPT-assisted animations, and Wordwall-based quizzes. Using these three platforms made learning more engaging and less monotonous.

The research results also showed that students were more comfortable using digital media because they were already familiar with gadgets. This aligns with the findings of Sinaga & Adlini (2025) in their study on teacher training for creating digital media. They found that the use of modern learning platforms aligns more closely with students' current learning habits. This explains why the media developed in this study was quickly accepted by eighth-grade MTs students.

Interactive multimedia forms like Edpuzzle, studied by Purniasih et al. (2024) , also demonstrated that visual interactions with user control enhance critical thinking skills. These findings reinforce the argument that the animation and visual displays in the Canva- and ChatGPT-based media in this study can positively impact conceptual understanding. Overall, discussions from various recent studies show a similar pattern. Interactive digital media tend to increase motivation, clarify abstract concepts, provide a more engaging learning experience, and facilitate teacher evaluation. The results of this study follow a similar path and demonstrate that the combination of Canva, ChatGPT, and Wordwall offers significant potential as a biology learning medium for junior high school students, particularly for cell topics. The integration of these three digital platforms creates a comprehensive learning experience, from the neat visual display to the helpful animated explanations to the game-like evaluations. All these elements work together, making this medium worthy of consideration as an alternative biology learning tool relevant to today's students' needs.

KESIMPULAN

Instructional Media interactive based Canva integrated with ChatGPT And Wordwall on material Cell Biology succeed developed with quality very good . Result validation expert show average score of 4.55 with category very worthy . This media capable increase involvement students , making it easier understanding draft cells , and create a learning process more attractive . Clear visual design , communicative animation , and evaluation interactive proven effective support science learning in class VIII MTs. This media worthy used as practical alternative learning media And relevant with need student ..

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