

Educational Content in Japanese Manga: Learning Science, History, and Ethics through Pop Culture

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Received: 22-04-2025; Revised: 05-06-2025; Accepted: 11-06-2025; Available Online: 12-06-2025

Published: 31-10-2025

Abstract

This study explores the educational potential of Japanese manga by analyzing how academic and ethical content is embedded within three selected titles: *Cells at Work!*, *Showa: A History of Japan*, and *Death Note*. Using a qualitative content analysis approach, the research examines how these works convey knowledge across the domains of science, history, and ethics through narrative and visual storytelling. Findings reveal that manga can promote scientific literacy, foster historical empathy, and stimulate moral reasoning by integrating cognitive and affective learning in accessible formats. The study highlights manga's interdisciplinary relevance and its capacity to function as a pedagogical tool in both formal and informal educational settings. These results underscore manga's role not only as a form of entertainment but as a culturally responsive medium for critical and character education. Implications for educators, researchers, and curriculum designers are discussed, with recommendations for further exploration of manga's integration into diverse learning environments.

Keywords: manga; science communication; historical empathy; ethics; Japanese popular culture

How to cite (APA): Rohmah, N., & Rosyidha, A. (2025). Educational Content in Japanese Manga: Learning Science, History, and Ethics through Pop Culture. *KIRYOKU*, 9(2), 431-441. <https://doi.org/10.14710/kiryoku.v9i2.431-441>

DOI: <https://doi.org/10.14710/kiryoku.v9i2.431-441>

1. Introduction

Japanese manga has grown from a niche cultural product into a global phenomenon, increasingly recognized for its educational significance. While traditionally associated with entertainment, recent scholarship has highlighted manga's ability to disseminate knowledge across diverse domains such as science, history, and ethics (Toku, 2015; Okuyama, 2022). In this study, educational content is understood in two ways: as explicit instructional elements (e.g., labeled diagrams, factual narration), and as implicit thematic representations that promote critical thinking, empathy, and ethical reflection. This dual framing enables a nuanced analysis of how manga fosters interdisciplinary learning, which is defined here as the integration of cognitive, emotional, and ethical domains through narrative and visual storytelling. Manga

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e-ISSN: 2581-0960, p-ISSN: 2599-0497

combines multimodal literacy with culturally resonant narratives, making it a compelling and accessible medium for both formal and informal learning environments (Wallner & Barajas, 2020). Particularly among youth and reluctant readers, manga provides an engaging entry point into complex subjects, promoting cognitive engagement and cultural literacy (Fitriana et al., 2021).

Entertainment aside, manga is now uniquely involved in both formal and informal education in its capacity to engage, promote literacy, and encourage critical thinking. New research suggests that manga is effective in education on values, science or even languages. Such that Özdemir and Ceylan-Dadakoglu (2024) identified that manga stories contributed positively to middle school students' ethical reasoning and core values perception. Girsang (2025) described the application of Bushido philosophy into manga characters for character education in Indonesian. Meanwhile, Ramadhan et al. (2023) in a study that used a manga-based learning application called Immunity at Work and found that this medium increased high school students' comprehension of biology by making scientific content more visually accessible and emotionally engaging. Furthermore, Chandler-Olcott (2015) highlighted the possibility for manga fandom to engage youth in multiliteracies, thus positioning it as an important asset for engaging in academic and out-of-school educational contexts. These results reiterate the nature of manga as a pedagogical medium which promotes interdisciplinarity and cross-cultural understanding. This paper furthers that work by examining the relationship between science, history and ethics in three comics titles, and provides fresh perspectives on the holistic educational potential of manga.

Scholars have also explored manga's educational potential across a wide range of disciplines. Wallner and Barajas (2020) highlighted manga's multimodal literacy benefits and its pedagogical value in primary and secondary education, while Toku and Dollase (2020) examined manga's ability to develop visual literacy and cultural perspectives in arts education. More recently, Okuyama (2022) emphasized the power of *tōjisha* manga in conveying mental health experiences and fostering empathy and social understanding. These findings are echoed by Pinon and Lefebvre (2023), who offer a comprehensive historical and thematic analysis of modern manga, underscoring its relevance for interdisciplinary education.

In the context of science education, manga titles such as *Cells at Work!* (*Hataraku Saibō*) offer engaging illustrations of microbiological processes by presenting immune cells as anthropomorphized characters. Kumasaki et al. (2018) demonstrated that using manga to communicate chemical safety concepts significantly enhanced students' understanding and engagement across Japan, Taiwan, and Thailand. These narrative-driven depictions enable readers to visualize scientific content in a way that traditional science textbooks often cannot. Contextualized storytelling supports learners in grasping abstract scientific concepts more effectively by embedding them in emotionally resonant scenarios. Manga also plays an important role in historical education. Shigeru Mizuki's *Showa: A History of Japan*, for instance, has been widely praised for blending autobiography with national history, enabling readers to critically engage with Japan's militaristic past and postwar transformation. Pinon and Lefebvre (2023) include *Showa* in their discussion of influential nonfiction manga, noting its role in promoting historical empathy and awareness. Although classroom-based studies remain limited, anecdotal and literary analyses suggest that historical manga can enhance students' critical thinking by humanizing past events.

Another important educational dimension of manga lies in its ethical and moral discourse. Widely popular series such as *Death Note*, *Fullmetal Alchemist*, and *Attack on Titan*

explore themes of justice, sacrifice, and moral ambiguity—encouraging readers to reflect on complex ethical dilemmas. Lewington (2020) investigates how adult readers of *shōnen* manga engage with themes of identity and moral complexity, suggesting that manga can be a vehicle for ethical inquiry. Kacsuk (2018) contributes to the discussion by examining the cultural framing and definitional tensions within manga, including its global pedagogical interpretations. UNESCO (2023) further emphasizes this potential in its Silent Manga Exhibition, where visual narratives promote peace, reflection, and intercultural understanding without the use of text.

In Japan, the use of manga is not confined to informal or extracurricular settings. Educational manga (*gakushū manga*) are increasingly incorporated into classrooms and libraries, often developed in consultation with educators to align with national curricula. These resources span subjects from mathematics to environmental studies and are widely accepted as tools that support visual learners. Their effectiveness as a teaching aid is largely due to these texts' ability to blend visual and written storytelling in a way that makes abstract or difficult concepts more intuitive for learners to understand. Manga is considered an effective teaching tool in the Japanese classroom due to the country's strong tradition of image-based communication in education, illustrated by the use of diagrams, characters, and symbolic illustrations that help boost memory and emotional investment. It is this cross-cognitive clarity and visual stimulation side-by-side that makes manga a socially acceptable and pedagogically a powerful medium in Japanese schools. Damiani and Fraillon (2025) highlight the alignment of such educational tools with the broader goals of global citizenship education. Fitriana et al. (2021) showed how Japanese pop culture, including manga, fosters identity formation and cultural engagement among Indonesian readers, while Girsang (2025) found that Bushido values embedded in manga narratives promote character education through cultural storytelling. These findings support the recognition of manga as both cultural artifact and educational medium.

Despite a growing body of literature, most existing research has examined manga's educational potential within isolated domains, as in science, history, or ethics, without exploring how these themes intersect within single works. Moreover, much of this scholarship remains grounded in Japanese educational settings, even as manga is increasingly consumed and interpreted across global contexts. There is a clear need for holistic studies that investigate how science, historical consciousness, and ethical reasoning coexist in popular manga, and how they collectively contribute to broader educational experiences in both formal and informal environments. To contribute to international educational discourse, this study positions manga as a comparative pedagogical resource and explores its application in multicultural and non-Japanese learning contexts. The central research question guiding this inquiry is: How do selected Japanese manga titles integrate educational content related to science, history, and ethics through narrative and visual storytelling? Through a qualitative content analysis of three culturally significant titles, this study examines manga's interdisciplinary value and its potential to support global citizenship education through culturally responsive and narrative-driven pedagogy.

2. Methods

This study employs a qualitative content analysis approach to examine educational content in selected Japanese manga titles. Qualitative content analysis is appropriate for identifying, interpreting, and categorizing patterns of meaning in textual and visual data

(Schreier, 2012). In the context of this study, it allows for a systematic investigation of how science, history, and ethical themes are embedded within narrative and visual elements of manga. The research follows an interpretivist paradigm, acknowledging that the meaning of educational content is constructed by both creators and readers through culturally situated lenses. The research was guided by the following question: How do selected Japanese manga titles integrate educational content related to science, history, and ethics through narrative and visual storytelling? To address this, a qualitative content analysis was applied to identify emergent themes reflecting interdisciplinary educational value. This design integrates both narrative interpretation and visual semiotics to ensure a comprehensive understanding of manga's pedagogical potential.

The manga titles were selected through purposive sampling based on the following inclusion criteria. First, the manga must be of Japanese origin and published in either print or digital format. Second, the work must contain explicit educational content related to science, history, or ethics. Third, the manga must be available in English translation to ensure accessibility to a wider academic audience. Lastly, the titles must have achieved recognition in popular, critical, or educational contexts. Based on the criteria, these three manga were selected:

1. *Cells at Work! (Hataraku Saibō)* by Akane Shimizu (2015). Published by Kodansha and serialized in *Monthly Shōnen Sirius*, this manga anthropomorphizes human cells to depict their roles in the immune system. The Red Blood Cell and White Blood Cell characters navigate various threats to the body, including bacteria, viruses, and cancer cells. The series presents complex biological processes—such as phagocytosis and cellular immunity—in accessible, story-driven formats. Its educational value has been recognized in science education contexts for simplifying abstract content (Kumasaki et al., 2018). Its action-oriented, *shōnen*-style presentation appeals particularly to adolescent audiences.
2. *Showa: A History of Japan* by Shigeru Mizuki (1988-1989). Originally published by Kodansha and translated into English by Drawn & Quarterly, this four-volume series blends the author's autobiographical experience with a historical chronicle of Japan from the 1920s to the 1980s. Mizuki juxtaposes personal narrative and national events, such as World War II, the rise of militarism, and the postwar economic miracle. The manga is lauded for its capacity to humanize historical trauma and engage readers in reflective historiography (Berndt, 2015). Also, it has been recognized for promoting historical empathy and awareness through its depiction of Japan's militaristic past and postwar transformation (Pinon & Lefebvre, 2023).
3. *Death Note* by Tsugumi Ohba and Takeshi Obata (2003-2006). Serialized in *Weekly Shōnen Jump* and published by Shueisha, this 12-volume series centers on a high school student who discovers a supernatural notebook that allows him to kill anyone whose name he writes in it. The story explores philosophical and ethical dilemmas about justice, power, and authoritarianism, as the protagonist, Light Yagami, assumes a godlike role in society. The series has been widely analyzed for its moral complexity and its ability to provoke ethical reflection (Lewington, 2020).

These titles were purposefully chosen to represent distinct yet interrelated areas of education, which are science, history, and ethics, allowing the study to explore manga's interdisciplinary educational potential across cognitive and affective domains. Primary data consisted of the narrative text and visual content from selected manga volumes. A total of 10 volumes were analyzed which consisted of *Cells at Work! Vol. 1–2*, *Showa: A History of Japan*

(compiled in 4 volumes), and Death Note Vol. 1–4. Supplementary materials such as reader responses, educator blogs, author commentary, and published instructional guides were consulted to support contextual interpretation.

The data was analyzed using thematic analysis following Braun and Clarke's (2006) six-phase method, adapted for multimodal visual storytelling. Here is the procedure of Braun and Clarke's (2006) data analysis method:

1. Familiarization. At this stage, all manga volumes were read and reread, with memo-writing used to capture initial impressions.
2. Initial Coding. At this stage, descriptive and interpretive codes were assigned to passages of text and visual panels using Excel. Codes included specific references to pedagogical themes, character arcs, and plot mechanisms.
3. Theme Development. Codes were grouped into candidate themes across the domains of science, history, and ethics in this phase. Visual codes (e.g., panel sequence, symbolism) were considered alongside narrative elements.
4. Theme Review. At this stage, candidate themes were reviewed by re-examining the full data set to assess whether the themes accurately represented the content and patterns across all three manga titles. During this process, segments that appeared inconsistent or too narrowly defined were either modified, merged, or discarded. For example, initial codes such as "biological threat response" and "cell cooperation," which appeared across multiple chapters of *Cells at Work!*, were combined into the more comprehensive theme "cellular defense logic." This ensured that the final themes captured the essence of the narratives holistically rather than being limited to isolated examples.
5. Theme Definition and Naming. At this stage, final themes were defined based on their pedagogical relevance, including "Human Biology as Conflict," "Wartime Memory," "Moral Dualism," and "Power and Consequences."
6. Interpretation and Reporting. At this last stage, final analysis integrated these themes with theoretical constructs from multimodal learning (Mayer, 2005), constructivist pedagogy, and global citizenship education.

Coding was conducted in Microsoft Excel. To improve reliability, two additional reviewers with backgrounds in Japanese literature and educational media independently reviewed a sample of codes. Discrepancies were resolved through peer discussion.

3. Result and Discussion

3.1 Result

The analysis revealed four overarching themes, each corresponding to one or more of the selected manga titles and their dominant educational domain. The results are presented as follows:

3.1.1 Human Biology as Conflict (*Cells at Work!*)

This theme explores how biological processes are represented through shōnen-style action tropes, where anthropomorphized cells engage in battles to defend the body. It frames immunity as a series of dynamic conflicts (e.g., between White Blood Cells and pathogens), using familiar tropes like teamwork, sacrifice, and resilience. Educational content is integrated

into these narratives through labeled diagrams, embedded scientific facts, and visual metaphors. The manga simplifies complex biological functions while maintaining accuracy, making it an effective medium for introducing scientific principles to general audiences. This theme also demonstrates how visual metaphors—such as cellular enemies depicted as monstrous invaders—aid in cognitive processing and emotional engagement with scientific ideas.

3.1.2 Wartime Memory and Subjective History (Showa: A History of Japan)

This theme highlights the way Mizuki presents national history through a personal lens. The narrative weaves autobiographical experiences with historical events, offering readers a dual perspective that is both emotionally grounded and historically informative. The manga's juxtaposition of caricatured characters with realistic war imagery critiques dominant nationalistic narratives and invites critical reflection. By framing history through individual experience, it cultivates historical empathy and supports educational goals related to ethical engagement with the past. The use of contrast in visual tone—grotesque yet empathetic—helps build emotional bridges between the reader and historical trauma. The manga also contextualizes historical phenomena such as propaganda, poverty, and nationalism in ways that humanize abstract socio-political forces.

3.1.3 Moral Dualism and Ambiguity (Death Note)

This theme centers on the ethical dilemmas and philosophical conflicts within the story. Light Yagami's transformation from a student to a god-like figure underscores questions about justice, power, and moral absolutism. The theme explores how characters embody competing ethical frameworks—such as utilitarianism versus procedural justice—and how narrative ambiguity prompts readers to reflect on their own moral assumptions. Visual cues such as shadowing, eye symbolism, and panel layout reinforce the tension between right and wrong. The absence of a clear moral resolution in the ending further engages readers in ongoing ethical inquiry, aligning with affective learning outcomes and higher-order thinking skills.

3.1.4 Power and Consequences Across Domains

Emerging across all three titles, this theme examines how the exercise of power, whether biological (Cells at Work!), political (Showa), or ethical (Death Note), leads to consequences that require interpretation and judgment. In each case, the manga engages readers in reflecting on responsibility, agency, and the ripple effects of decision-making. For example, the delayed effects of war in Showa, the spread of moral corruption in Death Note, and the breakdown of immune defense in Cells at Work! all reinforce the central idea that actions—at cellular, societal, or moral levels—have repercussions. This theme supports interdisciplinary learning by linking biology, history, and ethics through a shared concern for human consequences. These four themes together illustrate how manga can be a vehicle for both discipline-specific knowledge and integrative thinking, offering a rich platform for educational development across cognitive, emotional, and moral domains.

3.2 Discussion

The findings presented above demonstrate that manga can effectively communicate educational content across diverse domains. However, the significance of these results extends beyond the surface of entertainment or narrative style. This section interprets the themes uncovered in the analysis through the lens of relevant educational theories and prior research.

It also highlights the broader implications of using manga as an interdisciplinary and culturally responsive learning tool in both formal and informal educational contexts.

3.2.1 Manga as a Tool for Science Learning

The results from *Cells at Work!* confirm the capacity of manga to transform scientific content into relatable narratives. Kumasaki et al. (2018) found that using manga to teach chemical safety improved learners' comprehension across multiple countries, illustrating manga's educational utility in STEM. This aligns with Mayer's (2005) Cognitive Theory of Multimedia Learning, which argues that integrating text and visuals enhances processing in working memory. Manga's use of dialogue and images enables learners to build mental models that reinforce scientific understanding. Moreover, manga's immersive narrative aligns with constructivist principles, where learners actively construct meaning through engaging, contextual content.

Importantly, manga fosters science identity among learners who might otherwise feel disconnected from STEM. While formal studies remain limited, the affective and narrative appeal of manga has been shown to motivate learners in informal education settings. In manga clubs or self-guided reading environments, students often encounter science in a culturally familiar, non-threatening format. Manga thus helps normalize scientific knowledge within youth popular culture, extending access and engagement to broader audiences (Kumasaki et al., 2018).

3.2.2 Historical Consciousness through Visual Narratives

The analysis of *Showa: A History of Japan* demonstrates the educational potential of manga as an alternative historiographic medium. Unlike conventional history texts, which often emphasize objectivity and chronology, Mizuki's work prioritizes subjectivity, emotion, and critical perspective. This dual narrative—autobiographical and historical—creates a layered understanding of Japan's militarist past, its postwar transformation, and the lived experiences of ordinary citizens (Berndt, 2015). Visual literacy plays a critical role here. Mizuki's artistic contrast—between grotesquely caricatured people and hyper-realistic war scenes—functions as a rhetorical device that critiques nationalism and war ideology. This visual storytelling technique invites readers to question dominant narratives and reflect on how history is mediated through art. In an educational context, this approach supports historical empathy, a key outcome in modern history curricula that seeks to move students beyond dates and facts toward ethical engagement with the past.

Moreover, historical manga like *Showa: A History of Japan* facilitates transcultural learning, especially when integrated into non-Japanese educational contexts. These narratives enabled students to draw parallels between Japan's historical struggles and those within their own national or regional contexts, enhancing critical thinking and empathy. Manga, in this regard, serves as more than an educational supplement; it functions as a subtle instrument of soft power and cultural diplomacy, shaping global perceptions of Japanese society and values. By presenting history through emotionally resonant storytelling, manga fosters comparative historical reflection and intercultural dialogue, making it a powerful tool in global education frameworks.

3.2.3 Moral Development and Ethical Reasoning

Death Note exemplifies manga's capacity to serve as a text for moral inquiry. The ethical dilemmas presented in the story—centered on justice, free will, and authoritarianism—challenge readers to engage in ethical reasoning without providing clear moral resolutions. Lewington (2020) explores how readers interpret moral ambiguity and character conflict in *shōnen* manga, which aligns with Death Note's complex ethical themes. This pedagogical ambiguity aligns with Kohlberg's theory of moral development, especially the post-conventional level, where individuals assess moral issues based on abstract principles rather than obedience to rules. In this light, Death Note becomes more than entertainment—it is a platform for ethical discourse that stimulates higher-order thinking.

Manga's unique contribution to education lies in its emotive visual storytelling, which enhances both empathy and reflective thinking. Unlike traditional texts, manga can vividly depict internal psychological states through facial expressions, panel composition, symbolic imagery, and internal monologue—features that draw readers into the emotional and moral dilemmas experienced by characters. This visual-psychological depth enables readers to “experience” ethical struggle from the inside out, encouraging readers to reflect on their own values and moral reasoning. In this way, manga becomes a tool for affective learning, where emotional engagement and ethical reflection are integrated into cognitive understanding, ultimately supporting more holistic personal and intellectual development.

3.2.4 Interdisciplinary and Informal Learning Potential

Collectively, the findings from *Cells at Work!*, *Showa*, and *Death Note* highlight manga's transdisciplinary strength. These works do more than deliver content related to science, history, or ethics—they also blend emotional, cultural, and philosophical dimensions that enhance engagement and deepen understanding. This combination aligns closely with the 21st-century education paradigm, which emphasizes critical thinking, empathy, creativity, and global awareness as essential learning outcomes. Manga's ability to present complex ideas through accessible narratives allows it to function as both a cognitive and affective learning tool. Whether used in classrooms or through informal reading, manga encourages learners to engage in reflection, comparison, and interpretation across disciplinary boundaries.

Furthermore, manga can be used in a variety of educational contexts. In more formal learning settings, it can supplement conventional teaching methods by offering alternative channels for student involvement. For instance, there is the manga *Cells at Work!* has accompanied biology text books in high school to make it easier for students to see what their immune system is doing. Instructors find that students who have difficulty reading dense scientific material find the storyline format, which portrays cellular mechanisms through ramped-up suspense, to be an effective learning tool. Teachers say students who may not be able to handle dense scientific readings are able to understand the material when it's presented in a narrative format—cellular processes are depicted by relatable characters and dynamic visuals. This type of integration not only facilitates understanding, but also promotes student motivation and active participation in the classroom, particularly for visual learners and non-willing participants. In informal or extracurricular contexts, such as manga clubs or self-directed reading, it promotes literacy, curiosity, and learner autonomy. This flexibility is particularly impactful in multicultural and multilingual classrooms, where conventional teaching materials may lack emotional resonance or cultural relatability. Manga in the Indonesian context has been shown to enhance reading engagement and promote intercultural

competence among readers. As shown by Fitriana et al. (2021), manga has enhanced reader engagement and intercultural awareness among Indonesian students. Meanwhile, Girsang (2025) highlights manga's potential in reinforcing ethical values through Bushido principles. Studies indicate that the immersive storytelling and diverse cultural narratives in manga contribute to these educational outcomes (Wahyudin & Suwirta, 2017). Additionally, Perry et al. (2023) highlight how manga narratives foster intercultural dialogue by depicting shared spaces and values between characters of differing backgrounds. This aligns with UNESCO's Global Citizenship Education framework, which advocates for inclusive and culturally responsive learning tools (UNESCO, 2023). Manga's capacity to foster ethical awareness, empathy, and cross-cultural dialogue affirms its value not only as entertainment, but as a pedagogical medium that reflects and shapes global learning outcomes.

3.2.5 Limitations and Critical Reflections

While this study emphasizes the pedagogical strengths of manga, it is important to acknowledge certain limitations and critical considerations. First, in the domain of science learning, manga's narrative simplification—while effective for engagement—may risk distorting or oversimplifying complex scientific processes. Concepts like cellular signaling, systemic immunity, or biochemical pathways may be reduced to metaphors that omit nuance or lead to misconceptions if not supplemented by formal instruction. Second, in the ethical domain, manga often operates within heightened dramatic conventions, which can inadvertently glorify morally ambiguous characters. For example, the portrayal of Light Yagami in *Death Note* raises questions about the romanticization of authoritarian control and vigilantism. Without guided discussion, readers may interpret these narratives uncritically, potentially reinforcing problematic ethical perspectives or binary moral framings. Third, historical narratives such as *Showa: A History of Japan* may be filtered through cultural assumptions that are less accessible to non-Japanese readers. Translation choices, historical context gaps, and differing collective memories can affect the reader's ability to empathize with or critically assess Japan's wartime past. Cultural distance may result in either detachment or misinterpretation, particularly if the reader lacks background knowledge.

These reflections highlight the need for contextual scaffolding, critical pedagogy, and cultural sensitivity when incorporating manga into educational settings. Manga should be seen not as a standalone instructional tool, but as a complementary medium that can support, yet not substitute, rigorous and reflexive learning experiences.

4. Conclusions

This study has demonstrated that Japanese manga can serve as a powerful interdisciplinary educational medium by embedding science, history, and ethics into accessible and emotionally resonant visual narratives. Unlike previous studies that typically focus on a single thematic domain, this research offers a unique contribution by analyzing how these three dimensions coalesce within selected manga titles—*Cells at Work!*, *Showa: A History of Japan*, and *Death Note*. This integrated approach reveals how manga fosters not only subject-specific knowledge but also critical, affective, and ethical learning across domains.

Theoretically, the findings reinforce the value of multimodal literacy, which is the blending of visual, textual, and symbolic cues to construct meaning, and culturally responsive pedagogy, which emphasizes relevance, identity affirmation, and inclusivity. By engaging

readers through culturally embedded storytelling, manga creates learning experiences that resonate beyond traditional academic formats, particularly for diverse and underrepresented learners. The combination of cognitive and emotional engagement found in manga aligns closely with constructivist and global citizenship education models, making it a compelling tool in both formal and informal learning contexts.

Practically, educators can leverage manga in various ways: as supplementary reading in science and history lessons; as a stimulus for ethical debates; or as a resource in literacy, media studies, or intercultural education. Manga clubs, after-school programs, and self-directed reading environments also present valuable opportunities to foster engagement and critical thinking, especially among reluctant readers. Careful selection, contextual guidance, and structured reflection are essential to help learners move beyond surface entertainment and engage deeply with complex ideas. Manga's adaptability, global popularity, and interdisciplinary potential make it a timely and relevant asset for 21st-century education.

In addition to the above discussion, further studies that could explore the use of manga in the classroom are welcomed, especially those that concentrate on each genre with a rich pedagogical prospective. Take for example, educational manga (*gakushū manga*), historical manga, and science manga like *Cells at Work!* and *Dr. Stone* provide organized curricular content that can complement the learning of the discipline and improve retention of knowledge. Also, philosophical or even ethical manga as in *Death Note*, for instance, might help the development of critical thinking and moral judgement. Exploring the effects of different types of genres on learner engagement, knowledge retention, and character development over time will help determine their long-term educational impact and inform culturally responsive teaching strategies.

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