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CELLS AT WORK: MEDIA INTEGRATION MAPPING

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Abstract: *Cells at Work is a Japanese comic by Shimizu Akane that tells about body cells' science. The comic gained popularity as edutainment and adapted into several media such as spin-offs comics, picture books, games, stage plays, and many more. While it can act as good alternatives to learn about the science of cells, media that is too diverse can create ambiguity, confusing its users. The purpose of this research is to create a media integration mapping of Cells at Work. This research employs a qualitative descriptive method. The descriptive method is used to describe and determine the use of each adaptation medium. Then this research will map the media integration. The findings show that the diversity of educational media has its own roles and purposes. Spin-off comics have specific topics that can broaden the user's knowledge of various cells. At the same time, picture books are aimed at readers who want to study cells in depth without any side stories. Games are aimed at people who prefer interactive learning. The findings from this study can be used as a consideration for creating and integrating educational media.*

Keywords: *media integration; mapping; educational comic; science; cells at work*

Introduction

Educational media is an essential instrument in teaching and learning activities. Educational media are the senses, methods, and techniques used to make communication and relationships between teachers and students more effective in schools' academic and pedagogical process (Hamalik, 2016). According to Leshin, Gollock, and Reigeluth (1994), learning media is divided into five main categories: Human-based media, audiovisual-based media, print-based media, and computer-based media (Leshin et al., as cited in Sumiharsono, 2017, p. 62). Nowadays, our daily life is rather visual-oriented, therefore learning just by merely reading words and sentences is considered insufficient; students also

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require training in the literacy of images, gestures, space, and sound (Issa, 2017).

Cells at Work (In Japanese: *Hataraku Saibou*) is a comic by Akane Shimizu that focuses on the science of cells. The visual storytelling of this comic and the accuracy of the knowledge conveyed are its strong points. Cells at Work collaborates with Dr. Tomoyuki Harada, a Japanese doctor who is also a lecturer and hospital director, to maintain the educational content accuracy. Another doctor, Dr. Satoru Otsuka, a cancer researcher at Emory University School of Medicine in Atlanta, appreciated Cells at Work for depicting detailed cancer-related scenes accurately. The characters have a pretty unique name, such as Macrophage, Platelets, and Erythrocytes. These names are noticeably exceedingly unusual, given those are the scientific phrases that serve as individual names. However, this character's naming strategy is considered extraordinarily effective and justifies the genre categorization of this series as science manga (Berndt, 2017). The entwining of character-driven entertainment and education is recognized by both manga readers and Nippon foundation's Manga Edutainment project, Kore mo gakushū manga da! (Berndt, 2017). Cells at Work has received several awards as an educational comic. In 2016, Cells at Work was nominated in Kono Manga ga Sugoi! as one of the comics with the best male reader demographic (seinen). Kono Manga ga Sugoi! is a prestigious annual reference magazine series published by Takarajimasha since 2005. This magazine features annual manga ratings and reviews based on surveys of people in the manga (comics) and publishing industry. In 2018, 1.5 million copies of the printed Cells at Work were sold as the comic received its first animated adaptation and was nominated for best manga at the 64th Shogakukan Manga Awards. Due to its popularity, Cells at Work has also been translated and published in several countries, such as America and Indonesia.

Table 1. Achievements of Cells at Work (author)

2016	- ***Kono Manga ga Sugoi!* Guidebook listed the manga as the seventh top manga for male reader** - **Paul Gravett included the manga in his list of *"Top 22 Comics, Graphic Novel & Manga " For October 2016***
2017	- The manga had over 1.3 million copies in print. - 2 Spin-off comics were released (Cells at Work! Bacteria! And Cells NOT At Work!)
2018	- The manga had over 1.5 million copies in print. - Top 12 nominee in 64th *Shogakukan* Manga Awards - First Animation adaptation was aired - A Spin off comic (Cells at Work! BLACK) and a light novel adaptation were released
2019	- Won as **Best Storytelling (Best Writing) Animation** and nominate as Best animation category in Shanghai International TV Festival. - 3 Spin off comics (Cells at Work! Platelet! , Cells at Work and Friends! And Cells at Work Baby!) were released

2020	- Cells at Work! BLACK and Cells at Work! Season 2 animation are announced for 2021 - A spin off comic titled Cells at Work! LADY was released

Besides getting translations into several languages, this comic has also been adapted into several animated series, nine comic spin-off series, games, novels, and many more. Each comic spin-off has a different focus, such as Cells NOT at Work that tells about erythrocytes' maturation process until it becomes a mature Red Blood Cell, while Cells at Work and Friends are more focused on the task of the Killer T-Cell. Some comic spin-offs also have different settings that strongly influence the topic. For example, Cells at Work Code BLACK has a location where the body is very unhealthy, meanwhile Cells at Work Lady has the body of an adult woman as the main setting. An adaptation of the animated series Cells at Work consists of 2 seasons, with the first season broadcasted in 2018 and the second season in 2021.

Researches that discuss Cells at Work are rather rare, although there are few. For example, Nadila (2019) analyzed the portrayal of a Japanese culture, senpai-kouhai (senior and junior) relationship in Cells at Work comic. Meanwhile, Wood (2019) examined the potential of anthropomorphism in science by making Cells at Work as one of the primary example due to its popularity in using said method. Berndt (2017) also used Cells at Work as an example for its highly unusual but considered extremely effective method by using medical terms as character names. Though very detailed and informative, all of the researches only analyze Cells at Work comic's storytelling and culture portrayals in it, but none of it covers or discusses the wide range of its media adaptations other than comic yet.

Considerable amount of adaptations from Cells at Work might create ambiguity and confusion. It is necessary to identify the objectives of each media so readers can learn and decide what media they will choose based on their demographic and purpose. This study aims to formulate a content mapping based on media integration in Cells at Work.

Comic as Educational Media

Learning is an activity that involves acquiring knowledge, skills, and positive values by utilizing learning resources (Susilana, 2009). According to Sadiman (2018), learning media are various types of components in students' environment that can stimulate them to learn. Through one of the studies that have been conducted (Buckingham, 2015) found that learning media has great potential in attracting humans to participate and creating creative communication. Learning media has developed very rapidly, especially in this digital era (Lin, 2015). Some research using digitalization media has been conducted, for example artificial intelligence programs incorporated into robots to make learning tools for electrical engineering students (Zuhrie, 2017). Adjusting learning media to the technology used is also important because not everyone has access to the latest technology. Thus, we cannot completely abandon the use of non-digital learning media; for example, a research (Yoga, 2020) adapted traditional board game to an educational tool to teach about Topeng Malangan (cultural education). Apart from games, comics are also a promising media to be used as a learning medium, for example, for teaching English to Junior High School students (Rokhayani, 2014), chemistry to college students (Cintya, 2014), and as a

learning medium to improve media literacy (Monnin, 2010).

There are several theories about educational media classifications. Leshin, Gollock, and Reigeluth (1994) proposed that learning media is divided into five main categories: (1) Human-based media, such as teacher, instructor, tutor, role-plays, and group activities. (2) Print-based media, such as books, exercise books, handouts. (3) Visual-based media, such as books, charts, maps, graphs, pictures, and slides. (4) Audiovisual-based media, including video, film, slide tape, and television. (5) Computer-based media. Each medium has its own advantages and disadvantages. Suryaman (2003) theorized and summarized some of the mediums' strengths and weaknesses. For example, comics are said to be more attractive and are considered easier to digest compared to other print media, easy to carry and distribute, it can also be used for individuals to groups with a large number of people.

Comics as an information medium can be used to convey messages, such as helping in the learning and teaching process. Comics' benefits include educational information, media in advertising, and entertainment facilities (Astuti, 2018). This theory is supported by Ahmad (2012) who stated that the human brain has limited visual system capabilities and prefers less detailed images as stimuli, the information received through stimuli will then be filled with knowledge from previous experiences, resulting in more active engagement.

The primary role of comic books as educational media in teaching is their ability to create interest in students. To make the learning process effective, it can increase interest in learning and generate interest in appreciation (Sudjana, 2010). It can also help students develop critical understanding, help build relationships between managerial events and situations, and encourage the exchange of experiences, aid in decision-making, and enable students to represent professional situations based on theoretical precepts (Silva, 2016). Finally, it contributes to the development of reflective practice in the learning environment and, in particular, promotes the development of creativity, something that is observed during strategy implementation. Green (2013), Krusemark (2017), and Joshi (2019) all conducted various researches of comics as an educational tool and concluded that comics are considered effective to teach all kinds of subjects in a classroom.

Method

This study used a qualitative approach. Data collection is done by using direct observation method such as directly involved in reading, watching, or interacting with the Cells at Work adaptation media. Indirect observations were also used on media that were less accessible to researchers, such as the game Always Cells at Work, which has stopped operating since 2020 and cannot be downloaded due to the unavailability of the game in store applications. Supporting data in the form of images and theories are also sought. Media specifications in the form of comic artist's name, author's name, year of publication, serialization comic, story genre, and reader demographics were also recorded. Descriptive method is used to describe and determine the use of each adaptation medium. The analysis used in this study is based on the media classification theory by Leshin, Gollock, and Reigeluth (1994) with a few additions and alteration by considering the development of today's media. The data set is then interpreted and combined with theories or concepts that support the understanding of this case study.

Result

1. Cells at Work Comic

Figure 1. Cells at Work Original Comic
(bookwalker.jp)

The original Cells at Work comic was created by Akane Shimizu (figure 1). The first episode of this comic was published on 26th January, 2015 in the comic book series Monthly Shonen Sirius with a male reader demographic of adolescence and adulthood. This comic features a female main character who is the personification of red blood cells with identity number AE3803. Even though they have a number to identify thousands of other red blood cells, the main character is still referred to as simply "red blood cell" by other cells. The comic setting is that of an ordinary human body without a fixed place; it tends to change every episode. The story focuses on how cells fight to keep our bodies healthy. The diseases that are the main topic of each episode also vary, ranging from colds and allergies to severe ones such as cancer.

2. Spin-Off Comic: Bacteria at Work!

The first spin-off comic from Cells at Work is Bacteria at Work! by Haruyuki Yoshida. Instead of focusing on cells, this comic focuses on bacteria present in the human digestive tract. Unlike the original series, which had adolescent to adult

Figure 2. Bacteria at Work!
(bookwalker.jp)

male demographic, Bacteria at Work! is published in Nakayoshi, whose main demographic is mainly elementary schoolers to adolescents female readers. This spin-off's drawing style is also typical of shoujo manga, with a female character depicted with large shiny eyes and slender charming male characters (figure 2). Overall, this comic tells its readers to keep a proper diet and eat healthy foods. There are three types of bacteria in our stomach: bad bacteria, opportunistic bacteria, and good bacteria. If we eat unhealthy food continuously, a big disaster happens in our stomach.

3. Spin-Off Comic: Cells not at Work!

Figure 3. Cells not at Work!
(bookwalker.jp)

The second spin-off adaptation of the Cells at Work series titled Cells NOT at Work! (figure 3). The comic, which was published on 26th July 2017 and drawn by Moe Sugimoto, tells about the process of maturing Erythroblasts into adult red

blood cells with the guidance of a macrophage cell— even though the reality is not that smooth. The main character does not want to become adult red blood cells and just wants to be lazy, so the Macrophage has to persuade him almost desperately. Cells NOT at Work! has a demographic of adolescent male readers and is serialized in the comic Monthly Shonen Sirius. This comic focuses on red blood cells from birth, childhood (Erythroblast), to adulthood. The comic's setting is Bone Marrow (Erythroblast Island), the place where red blood cells are produced.

4. Spin-Off Comic: Cells at Work Code BLACK

Figure 4. Cells at Work Code BLACK (bookwalker.jp)

The third spin-off adaptation of the Cells at Work series! With the title Cells at Work Code BLACK (figure 4). This comic was first published on 7th June 2018 by comic artist Issei Hatsuyoshi and writer Shigemitsu Harada. This comic has a significant setting, which is an adult man's body with very unhealthy habits. If Cells at Work have an overall cheerful and comical atmosphere, Code BLACK is marketed as a comic filled with despair, pressure, and helplessness. The comic's title is adapted from the Japanese term "Black Company", which generally refers to companies that exploit their workers in a very unhealthy manner. A common practice in these so-called "Black Companies" is to employ large numbers of young employees and then force them to work large amounts of overtime without overtime pay. Workplace conditions are usually rather poor, and workers are often anguished over their superiors' verbal abuse and power abuse or intimidation (Japan Times, 2013). This aspect of working nonstop overtime to poor working conditions is what characterizes Cells at Work Code BLACK — the body in which they work is very unhealthy, to the point the cells don't have time to rest because attacks both from outside and from within come and go nonstop. This comic has a demographic of adult male readers due to some of its male-gaze fan services; female white blood cells with half-exposed chests or other female characters wear minimal clothes, in contrast to the male characters described as ordinary, plain-looking, or very sturdy, almost resembling monsters. It is also the only spin-off with a mature rating (18+). Much like the original series, Cells at Work! Code BLACK tells us to live healthier lives, although with a slightly more radical fear-arousal approach. This spin-off is considered the most successful as it has received its own animated adaptation.

5. Spin-Off Comic: Cells at Work and Friends

Figure 5. Cells at Work and Friends (bookwalker.jp)

Cells at Work and Friends is the fourth spin-off comic adaptation of the Cells at

Work series (figure 5). The comic, which is a collaboration between writer Kanna Kurono and comic artist Mio Izumi, serialized on Bessatsu Friend, has a demographic of young women readers. Mio Izumi himself is a comic artist who is known for his shoujo manga works. Published on 12th January 2019, Friends tells the story of a burly man who is the personification of Killer T-Cell. The man who is also the leader of this group is very masculine, assertive, fierce, and disciplined, so that his subordinates often fear him. But behind that, he is a clumsy, shy, anxious man who has a feminine side. This series focuses on the lonely daily story of Killer T-Cell with comedy flavor. There are several action scenes, most of which are Killer T-Cell and White Blood Cell fighting against the enemy, but it is not as dominating as the original Cells at Work Series. However, that doesn't make Friends any less educative than other spin-offs — the comic conveys its knowledge in a more peaceful way.

6. Spin-Off Comic: Cells at Work Platelets

Figure 6. Cells at Work Platelets
(bookwalker.jp)

Cells at Work! Platelets is a comic spin-offs Cells at Work with the focus of the daily story of platelet cells' personification, which is described as little girls (figure 6). This 4-panel comic by Yuuko Kakihara and Yasu has been serialized in Monthly Shonen Sirius since 25th May 2019 with a demographic of teen male readers. Due to the nature of platelet cells that cannot fight, this comic tends to be of the slice of life and comedy genre. The comic format itself is yonkoma (4-koma, four cell manga) which is usually used for gag comic strips. In accordance with the title and main characters, this comic provides education about platelet cells significantly.

7. Spin-Off Comic: Cells at Work Baby

Figure 7. Cells at Work Baby
(bookwalker.jp)

Suppose the original Cells at Work focuses on mature red blood cells, the Cells at Work Babies are spin-offs that tell about young cells (figure 7). The comic's setting is the body of a baby. Produced by Yasuhiro Fukuda and first published on 17th October 2019, Baby was serialized in the comic Morning with male readers demographic. Following its significant setting, this comic serves to educate readers about the cell-scale processes and events in a baby's body, such as when a baby is born.

8. Spin-Off Comic: Cells at Work Lady

Cells at Work Lady, as the title suggests, has a significant place in the body of a woman (figure 8). The comic, which is a collaboration between writer Shigemitsu Harada and comic artist Akari Otokawa, has a demographic of readers from teenage girls to adult women and first published on 22th January 2019. The com-

Figure 8. Cells at Work Lady
(bookwalker.jp)

ic's main character is Macrophage, who is depicted as a male waiter (butler) - unlike in other spin-offs, which always depict Macrophage as a female maid. The Macrophage is depicted as a religious figure; he diligently prays to a goddess statue resembling the Virgin Mary on an altar, representing a woman's womb. By the demographics, the characters who play a role in this comic are described as handsome men (bishonen) with their distinctive charms. This comic focuses on providing education about cell-scale processes and events in a woman's body, such as menstruation and pregnancy.

9. Spin-Off Comic: Cells at Work WHITE

Figure 9. Cells at Work White
(bookwalker.jp)

Cells at Work WHITE is the latest comic spin-off from the Cells at Work series! Which was first published in October 2020 (figure 9). This Tetsuji Kanie's comic was serialized in the comic Monthly Shonen Sirius with a demographic of male readership aged adolescents and adults. WHITE focuses on a beginner white blood cell who is mentored by his seniors. Overall, this comic is similar to the Cells NOT at Work! Spin-off, except that instead of red blood cells, this spin-off tells about the process of maturing white blood cells.

According to Nurgiyantoro (as cited in Tirtaatmadja, 2012, p. 86), the intrinsic aspects of a story can be mapped into three broad categories: characters, story lines, and settings. All comics from Cells at Work have linear storyline, therefore based on the setting and main characters, Cells at Work spin-off comics can be categorized to:

Table 2. Spin-offs categorization based on the setting and main characters
(author)

Spin-offs Title	Setting	Main Character(s)
Cells at Work! Cells at Work! and Friends Cells at Work! Platelets Cell at Work! WHITE	Human's body (in general/ not specified)	Red Blood Cell (female) Killer T-Cell Platelets White Blood Cell
Bacteria at Work! Cells NOT at Work!	Human's digestion system Bone Marrow	Good, Bad, Opportunistic Bacteria Erythroblasts
Cells at Work Code BLACK Cells at Work Baby Cells at Work Lady	Unhealthy Adult male body Baby's Body Woman's body	Red Blood Cell (male) Red Blood Cell (baby) Macrophage

10. Downloadable Content: Free PSA Posters

Figure 10. Downloadable Cells at Work Posters (hataraku-saibou.com)

These are free-to-use posters that anybody can download through Cells at Work's official websites. Most posters act as a reminder, notice, and useful tips such as the correct way to wash your hands and remind them to wear masks properly (Figure 10). These posters can be categorized as Public Service Announcement tools because their objective is raising awareness and changing public behavior towards a social issue (Paek, 2011)—in this case, awareness to carry out obligatory health protocols in the pandemic era. These posters are aimed at people of all ages, especially children. This can be seen from the use of chibi images and platelets, which are characters with representations of children.

11. Picture Books

A series of picture books were also released. These books are similar to mini encyclopedias about cells, filled with written articles, infographics, and quiz sections to solidify readers' understanding. Each book's topics are also varied and up-to-date; the latest picture books discuss cells and the coronavirus relevant to the current Covid-19 pandemic phenomenon (figure 11). This book is targeted at readers aged junior high school and above. It is suspected that this is due to the explanation of the material in the form of text, adequately meets books, terms, and kanji,

Figure 11. Cells at Work Various Picture Books (bookwalker.jp)

which tend to be challenging to understand by elementary school age or younger children in Japan.

12. Picture Books For Kids

Figure 12. Cells at Work Picture Book for Kids (bookwalker.jp)

A particular picture book for children titled "Picture Book Cells at Work Bacteria vs. White Blood Cells 'Bloody War'" was released in January 2021. This book is based on the original comic story Cells at Work with some changes that allow young readers to interact with the book, such as helping red blood cells solve puzzles for forked routes to reach the destinations (figure 12).

13. Animation Adaptation

Figure 13. Cells at Work Animations Announcement Pictures
(hataraku-saibou.com)

Animations created by David Production based on the comic Cells at Work and Cells at Work Code BLACK. The first season was aired in July 2018, and the second season was aired in January 2021 along with the premiere of Cells at Work Code BLACK animation. These animations have the same story and plot as the original comics (Cells at Work and Cells at Work Code BLACK), but are fully animated, colored, and voiced (figure 13). Some people prefer these animations because it is considered less confusing—with its fully colored animation, they can see, differentiate, and understand the characters more clearly. It is also considered more entertaining—the same story but now with voice acting and sound effects, adding each scene's intensity and immersion. These animations also act as promotional material to those who don't read comics. Cells at Work anime are aimed at people of all ages and considered more child friendly compared to Cells at Work BLACK anime which does have a demographic of adult readers from its origin.

14. Original Song

Original songs of Cells at Work Season 1st anime opening, "Mission! Health Comes First" tells how the cells are working hard for our health. The song lyrics are full of educational information about each cell's essential roles, such as Red Blood Cells sending O2 to every cell in the body. The second original song, which is

Figure 14. Cells at Work Original Soundtracks Album Covers
(amazon.jp)

used for the season 2 opening, "GO! GO! Cells Fiesta", is similar in the educational sense.

15. Trivias (Website)

Figure 15. Cells at Work Trivias on The Website
(hataraku-saibou.com)

In some of Cells at Work websites or those affiliated with it, there is a particular page that gives us educational information, such as the danger of germs, bacteria, or specific sickness (figure 15). In the official Cells at Work anime web-

Figure 16. Cells at Work and Pabron S Gold W Collaboration Website
(https://dekopita-hatarakusaibou-pabron.com/)

site, the information was written by Dr. Tomoyuki Harada, an actual Japanese doctor who also acts as the anime supervisor to maintain its accuracy. In a collaboration website between the anime with Pabron S Gold W (a cold medication by Taisho Pharma), the educational information is provided by Taisho Pharmaceutical and presented full-voiced with ASMR feature to enhance user's immersion (figure 16).

16. Smartphone Games

A mobile game called Always Cell at Work (*Itsudemo Hataraku Saibou*) was released on 2018 (figure 17). The game includes many mini games, such as tower defense, puzzle, gacha, and many else. The game is considered confusing, not user-friendly by many users, and gets many negative reviews on Google Play Store. This game has stopped operating at the beginning of 2020. Another new smartphone game that NetEase Games developed was announced at the beginning of 2021, though further details have not been disclosed yet. Other than original games, Cells at Work also did a collaboration with Appirits Inc. multiplayer smartphone game, RPG GOETIA X, from 15th to 29th August 2019 (figure 18). This collaboration allows users to play as Macrophage, Red Blood Cell, or Platelets in the game. Staphylococcus Aureus Special Quest was opened on 22nd August. Teams consisted of "Cells at Work" collaboration characters were said to have advantages in battles.

Figure 17 Always Cells at Work Game.
(https://play.google.com/store)

Figure 18. GOETIA X and Cells at Work collaboration.
(https://news.qoo-app.com/)

17. Interactive Gimmicks (Website)

Figure 19. Cells at Work's Various Interactive Gimmicks
(https://dengekionline.com/)

On the official website, there is a particular page that allows users to explore cells' world. Users can play a simple "Spot the character" game on a big image that pictures a bustling city. When we hover to one character, the site will tell us who that particular cell is and its role in our body. There is another interactive gimmick in the collaboration website between Cells at Work and Pabron S Gold W. By allowing the website to access one's phone camera and sticking the users' forehead directly on the forehead of the character reflected on the smartphone, users can have a simulated experience that the character cares about their physical condition (figure 19).

18. Quizzes

Figure 20. Cells at Work Weekly Quiz on the Website and quiz book
(hataraku-saibou.com)

Figure 21. Cells at Work's Collaboration Quizzes
(https://dengekionline.com/)

On Cells at Work's official website, there is a weekly quiz page that contains short questions about the human body (figure 20). The quiz questions are related to the new anime episode that will air that week. The website will show the answers to the questions after the episode airs.

Meanwhile, in the collaboration website between Cells at Work and Pabron S Gold W, there is a similar quiz feature but considerably more systematic (figure 21) Before doing the quiz, users have an option to study with the characters about cold mechanisms and the medicine's contribution to fighting the cold, then if the users can answer "Pabron Quiz" correctly, there's a prize in the form of download-

able content (limited wallpaper).

Discussion

From the classification of educational media theory by Leshin, Gollock, and Reigeluth (1994), it can be concluded that Cells at Work used ten main types of media: Comics, Light Novel, Original Songs, Smartphone Games, Website Gimmicks, Animation Adaptations, Radio Drama, Stage Shows, Picture Books, and Downloadable Contents (figure 22). Each type of media has its strengths and roles. For example, the comic is the leading media, and the picture book acts as a more detailed and formal educational tool for those who want to learn more about cells. Meanwhile, animations are for those who prefer learning with sound and full-colored pictures. Cells at Work media was designed and tailored to fit audiences of all genders and various ages.

Mansoor (2015) proposed three vital aspects in an immersive vernacular educational media: (1) Cultural insight. Cells at Work adapts all kind of Japanese cultural insight, such as characters that are depicted as traditional Japanese worker, the relationship between senpai – kouhai (Nadila, 2019), and even the reason why Red blood cell was chosen as the protagonist of the original story which might have a relation with the association of red color in Japanese (color of victory and color of the national flag which coincides with the combination of red blood and white blood cell); (2) Craft the message, to make people learn and develop insight of content inside the story as the character does. This

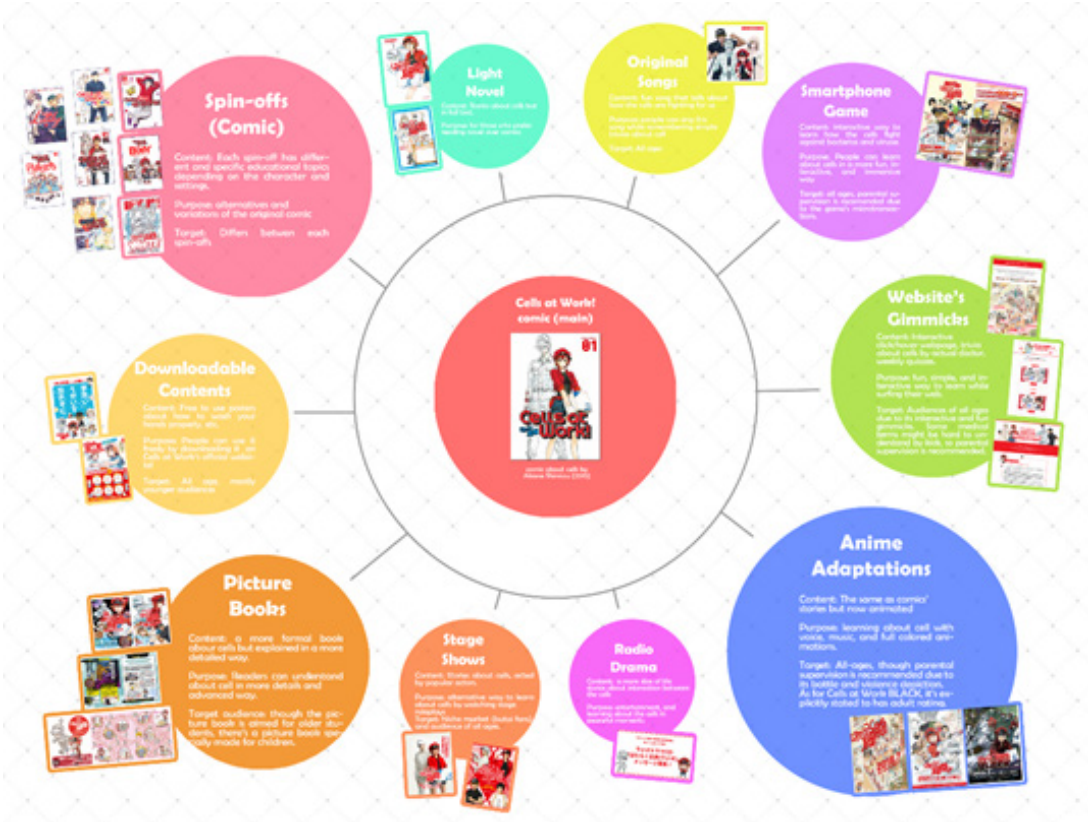

Figure 22. Media Integration Map of Cells at Work (author)

is especially true in Cells at Work original comic; the reader grows and learns with the main character, Red Blood cell, who is depicted as an amateur cell and rather naive. As the story progresses, both the reader and the main character meet new cell friends, experiences, faces, and learn about all kinds of bacteria and danger that may harm our body; and (3) Communicate the message through storytelling. Representative characters are said to be one of the best storytelling in the early 2000's which use a character with similar age and characterization of the target market. Cells at Work's anthropomorphism is considerably one of its vital aspects compared to other educational comics.

Classified Media Associated with Target Users

Cells at Work depicts the cells as human with all kinds of stereotypes; clumsy and gentle red blood cells, cool white blood cells, cute platelets, and older sister Macrophage. Each character has its own notable spin-offs with its own specific target market. For example, spin-offs that are dominated by pretty male characters (Cells at Work! Lady, Cells at Work! and Friends, Bacteria at Work!) have mainly female demographic, meanwhile spin-off with cute female characters (Cells at Work! Platelets) or dominated with fierce battle (Cells at Work! Code BLACK) have mainly male demographic. The Cells at Work spin-off comic also has its own strengths and characteristics to suit its target audience. Bacteria at Work! use love and intrapersonal issues as the main character's side conflict. According to Mansoor (2012), such conflicts are typical of shoujo manga. Meanwhile, comics aimed at male readers, such as Cells at Work WHITE and Cells at Work BLACK, focus on suspense and action, telling the development of the main character, which is considered as a stereotype of shounen comics (ibid., 2012). Media from Cells at Work has adequate and informative graphics. Apart from Cells at Work BLACK and Cells at Work Lady which are explicitly stated to have an adult rating, other Cells at Work media are deemed rather suitable for audiences of all ages ; although parental supervision is recommended. Though picture books are said to be intended for pre-teen to adult, separate picture books for children have also been made. Informative gimmicks such as trivia and quizzes can also be used by children with parental assistance so children can understand the difficult medical terms used. Interactive aspects of some media such as trivia, website gimmicks, and picture books can also increase immersive levels and engagement of young users in consuming media and studying cell science. The game itself is very interactive and immersive, however parental supervision is advised due to the micro transaction that might occur in-game. Its novel is aimed for more mature audiences due to its word lengthy nature and less images to depict the scenes. More specific media such as stage show is aimed to a more niche group such as stage show (butai) fans, though it can be consumed by audiences of all ages too.

Classified Media Associated with Learning Styles

Each student has their own preferred way to learn something which is important to the educators or teachers when creating their educational material (Emini, 2020). Neil D. Fleming created a model with three learning styles called the VAK Model of Learning: visual, auditory, and kinesthetic. Schwarz (2009) states that the younger generation nowadays grows up in a very visually oriented world so that complex ideas previously taught traditionally through books can now be better conveyed through media with more substantial visual aspects. About 65% of

the pupils in school classes use the visual learning style, which means they learn by seeing the information in various graphical forms (Roel, as cited in Emini, 2020, p. 147). Beginning from a comic, Cells at Work is mainly visual-based media that suits people with visual learning styles. The anthropomorphism in Cells at Work promotes readers to learn and memorize all kinds of cells with its stylized character design and visual. The majority of characters are described as young employees, and through their actions, explain the function of these cells in maintaining the body and in response to injury and disease. While the antagonists in this story (for example, viruses and disease-causing bacteria) are depicted as monsters or aliens, the protagonist's body cells are represented as ordinary humans to create a sense of closeness with the readers (Wood, 2019). Cells at Work also facilitates those who use auditory learning style with original songs, stage plays, and animations. Games, picture books, and website gimmicks allow users to interact directly with the media, which suits kinesthetic learners who learn by doing.

Classified Media Associated with Persuasive Techniques

Persuasive techniques convince others to agree with our facts, accept our argument and conclusions, and adopt our way of thinking (Asha, 2020). Each Cells at Work media has a slightly different approach in conveying knowledge. Compared to the other Cells at Work's medias, comics use fear arousal approach by showing them the dangers of lurking inside our body and the consequences it may bring if we don't stay healthy and show how vital each cells' roles are in keeping us alive every day. Fear arousal approach is considered most effective when a communication describes a relatively high amount of fear, emphasizes its severity and vulnerability, and recommends a one-time behavior (Tannenbaum, 2015). Cells at Work! Code BLACK notably uses this approach intensively. It depicts the main character damaged both mentally and physically due to the extremely unhealthy working environment (human body). Almost all of Cells at Work's educational media use persuasive hyperbole technique, which emphasizes points by exaggerating. For example, intense battle fight scenes to depict how the immune cell fights harmful intruders such as bacteria in our body is one of Cells at Work's trademark. The hyperbole technique was also mixed with inclusive-exclusive language, which is applied to their anthropomorphism. Though some are adapted or based on its tangible form, some bacteria are depicted as creepy monsters to give a scary impression, stimulate readers' sense of danger, and give a sense of solidarity between the readers and the cells who fight the bacteria. Few other media such as downloadable content, internet gimmick, and picture book didn't use fear arousal as intense as the comics and animations. However, they still emphasize on cause-and-effect and inclusive-exclusive language to create a sense of responsibility.

Conclusion

Cells at Work is an educational comic adapted to various media such as spin-off comics, animation, original soundtrack, and many more. Considerable amount of adaptations can induce potential ambiguity so it is necessary to identify each media's objectives in the form of integrated media mapping. From the map, we can learn that each media have their own purpose, strength, and target audience. For example, those who prefer to learn by visual and need detailed information about cells can learn by reading Cells at Work! Picture books and those who prefer to learn by visual and auditory

can watch the animation. Those who prefer to learn by kinesthetic can access Cells at Work website with its various gimmick or play the smartphone game. Apart from Cells at Work BLACK and Cells at Work Lady which are explicitly stated to have an adult rating, other Cells at Work media are rather suitable for use by users of all ages; although for some male targeted spin off, parental supervision is recommended due to some difficult medical terms and extreme battle depictions.

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