CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Subject

There are two categories for the target for this design, the primary subject are Indonesian History teachers, and the secondary subject are high school students. The teachers are the subject who delivered the media to the students. The specifications and explanations for these targets are as explained below:

3.1.1 Primary Subject

1) Demographic

a. Gender: Male and female

b. Age: 22—30 years old

For this research, the author targeted history teachers who teaches in High School level. In Indonesia, a Bachelor of Education degree is needed in order to become a teacher. According to Indonesia's education system, high school students usually entered university around 18 years old. To get a Bachelor of Education degree, the students must go through 4 years of education. Furthermore, according to Badan Pusat Statistik (2023), there were 58% people aged above 25 who have accessed the internet in the province of Lampung. Hence online based supplementary learning media are likely accessible to the targeted audience.

c. Education: Bachelor of Education's degree.

d. Socio-Economic Status: B—A

Katz & Rideout (2021) finds that about 65 percent of families with incomes below the federal poverty level either reported times when they could not participate in class or do their schoolwork due to a lack of computer or internet access, or when they had to participate via smartphone (p. 22). In other words, people with lower income have a harder time to access the internet, gadget or computer, which

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is needed to operate a website. Hence this supplementary learning media is targeted to teachers with a higher income status with easier access to the internet.

2) Geographic

Bandar Lampung

Previous research by Supriyanto (2018) found that students in Muhammadiyah 1 Metro High School in the Province of Lampung experience difficulties in learning Indonesia's early humans. Furthermore, the author based this creation on the problems found in Xaverius Bandar Lampung's high school students. The data collection such as questionnaire, observation, and interview are done in Xaverius Bandar Lampung. According to an interview with an Indonesian History teacher in Xaverius Bandar Lampung high school, the teacher revealed that most of the students were not interested in learning Indonesian early humans or history in general. The teacher had to come up with interactive and innovative ways to keep the students engaged in the learning process. Hence a supplementary learning media about Indonesian Homo erectus is necessary to design.

3) Psychographic

a. Indonesian History teachers who struggle to keep the students focused on the learning process.

b. Indonesian History teachers who struggle to find supplementary learning media about Indonesian Homo erectus.

c. Indonesian History teachers who are looking for an interactive learning media about Indonesian Homo erectus.

3.1.2 Secondary Subject

1) Demographic

a. Gender: Male and female

b. Age: 15—18 years old

In Indonesia, high school students are usually aged 15—18 years old. Those ages are determined by the mandatory 9 years of education program started by former President Soeharto in 1994 (Museum Kepresidenan, 2018). The starting age for elementary school is 6 years old, students must go through 6 years of elementary school, 3 years of middle school, and 3 years of high school.

c. Education: Middle school

d. Socio-Economic Status: B—A

Katz & Rideout (2021) finds that about 65 percent of families with incomes below the federal poverty level either reported times when they could not participate in class or do their schoolwork due to a lack of computer or internet access, or when they had had to participate via smartphone (p. 22). In other words, people with lower income have a harder time to access the internet and computer, which is needed to operate a website. Hence this creation is targeted to people higher income people with easier access to the internet.

2) Geographic

Bandar Lampung

Previous research by Supriyanto (2018) found that students in Muhammadiyah 1 Metro High School in the Province of Lampung experience difficulties in learning Indonesia's early humans. Furthermore, the author based this creation on the problems found in Xaverius Bandar Lampung's high school students. The data collection such as questionnaire, observation, and interview are done in Xaverius Bandar Lampung. According to CNBC Indonesia (2023), 65.21% of citizens above 5 years old in Lampung has accessed the internet. Hence the usage of gamification website regarding Indonesia's Homo erectus for high school students is possible to apply in Bandar Lampung.

3) Psychographic

a. High school students who struggle to learn Indonesia's early humans.

b. High school students who struggle to keep their focus in history class especially regarding Indonesia's early humans' history.

c. High school students with visual learning style.

3.2 Design Methodology and Procedure

To design a gamification website regarding Indonesia's Homo erectus for high school students, the designer chose the user-centered design method. According to Interaction Design Foundation, user-centered design is an iterative design process in which designers focus on the users and their needs in each phase of the design process. This method is appropriate for the context because it is centered around the user, similar to human-centered design, but specifically around the user. The user of this project is highly predictable, which high school students, so it is possible to use UCD and focus on a particular subject.
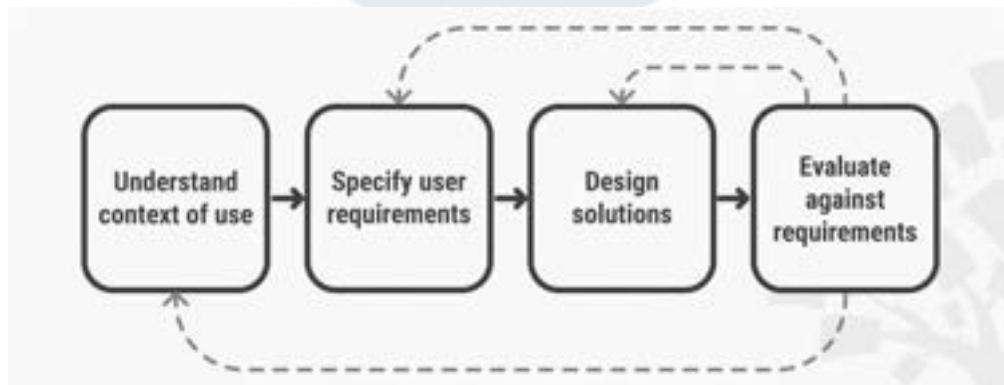

Figure 3.1 User Centered Design Process
Source: https://public-media.interaction-design.org/...

The products that are made from the UCD method are more likely to meet users' expectations and needs, because the users are closely involved. There are four main distinct phases in UCD. The projects in UCD are based upon an explicit understanding of the users, their tasks and environments. Based on the collected insight, designers then identify the users' requirements. From there, it is a back-and-forth process of designing and evaluation by the designer and user until the evaluation results are satisfactory.

3.2.1 Understand the Context of Use

The first stage is focused on understanding and empathizing with the users' needs, preferences, and behaviors. This step can be done through various methods such as interviews, surveys, and observations. The designer has done observations, interviews, and questionnaires for this step. These steps were done with a goal of understanding the learners', teacher's and professional's perspective in mind. Although the most important thing is to understand the users, the designer needed more validation from the professionals and teachers who have the proper knowledge of Indonesia's early humans. Teachers also have the experience and interpretation of the students' action and behavior in classes. Therefore, the designer can get another perspective of the students outside from themselves. Besides data collecting, the author has also done studies on existing and reference projects. The purpose of these studies is to enrich the author's imagination and creativity before diving into the designing process of this project.

3.2.2 Specify User Requirements

The second step is to identify the users' issues and needs. Based on the identification, designers must define the requirements. The designers have to specify what problems and pain points do they want to solve for the users. In this step, the author planned to note down the insights that have been obtained. From there, the pain points from users can be identified, and the author has to establish the fitting solutions for the problems. The author uses brainstorming method by finding inspirations from books, films, or similar media. Then the author lists down a few ideas and choose which one is appliable or has to be eliminated. Details are added to the remaining ideas, thus creating a concept for the entire game. Once the concepting process is done, the author moves to creating a mood board and stylescapes which becomes the basis of this project's visualization idea.

3.2.3 Design Solutions

Based on the appointed requirements, designers have to create the appropriate solutions. Wireframes, mockups, and prototypes are made in this step. This process has to cater to users' needs and pain points that has been pointed out from the previous step. In this step, the designer establishes a timeline to help the project being done on time.

3.2.4 Evaluate Against Requirements

This stage is about testing the designed solutions with real users. Users needed to involve closely to identify usability issues and point out improvement areas. The evaluation process allows various testing methods such as usability testing; A/B testing; and heuristic evaluation. In this step, the author planned two user testing, first is alpha test and then beta test. There are iterations after each

3.3 Research Techniques and Procedure

The techniques used in this project are interviews, observation, and questionnaire to better understand the existing problem and phenomenon around Indonesia's early humans' history material. It is one of the first few materials in Indonesian history subject, and very crucial to learn in order to explain how the rest of history happens. The main goal of the used data collection techniques is to understand the current context from the teacher's, students' and professionals' perspective about Indonesia's early humans. Only then the designer can create a gamification website according to the identified problems.

3.3.1 Observation

According to Sugiyono (2013) observation is a technique of data collecting that does not revolve only on people, but also other objects in nature (p. 145). The author performed two observations in Xaverius Bandar Lampung High School. The goal of the observation is to gain knowledge of the steps that are usually performed in Indonesian History class, in accordance with the current curriculum. Besides that, the author also aims to inspect the learners' behavior in class, based on the used learning media. The observation was performed on September 18, 2024, starting 08.30 a.m.—10.00 a.m., the subject of the

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observations were tenth grade students from class X3 and X2. The insight derived from this observation allows the designer to identify the root problem of the difficulties of learning Indonesian History subject using a participatory study method.

3.3.2 In-depth Interview

The author used an unstructured interview method, which is defined as a free-flowing interview, without an arranged systematic and complete guide in the data collection process (Sugiyono, 2013, p. 140). This method of interview is often used for deeper investigation on the respondents. Furthermore, the author used in-depth interview to obtain detailed answers from the interviewee. The author planned two in-depth interviews to gain more insight on the context, i.e.:

3.3.2.1 In-depth Interview with Indonesian History Teacher

The author performed an in-depth interview with Roberta Adinda Kesumajati S.Pd as an Indonesian History teacher at Xaverius Bandar Lampung High School. The main goal of this interview is to identify the issue from another perspective outside of the students. Insights from the history teacher is needed to understand the current education system and the students' reaction from the recent change in curriculum. This method is also used to validate the information that the author found by doing literature review. The instrument of interview questions to an Indonesian History teacher is taken from a theory by Supriatna et al. (2020) i.e.:

1. Sudah berapa lama ibu mengajar di SMA Xaverius Bandar Lampung?
2. Bagaimana proses pembelajaran Sejarah Indonesia setelah penerapan Kurikulum Merdeka?
3. Apa saja capaian pembelajaran Sejarah Indonesia, khususnya materi manusia purba Indonesia?
4. Bagaimana kondisi kelas saat ibu mengajar? Ibu boleh menceritakan kondisi kelas secara bebas.

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5. Menurut ibu, seberapa tertarik siswa-siswi untuk belajar Sejarah Indonesia, khususnya pada materi manusia purba Indonesia?

6. Selama ibu mengajar, impresi apa yang timbul dari siswa-siswi selama mempelajari manusia purba Indonesia?

7. Bagaimana rata-rata nilai ulangan atau ujian siswa-siswi di dalam mata pelajaran Sejarah Indonesia?

8. Materi manusia purba Indonesia merupakan salah satu materi awal yang diajarkan kepada siswa-siswi pada pelajaran Sejarah Indonesia. Menurut ibu, seberapa pentingkah materi manusia purba Indonesia itu? Mengapa?

9. Media pembelajaran utama apa yang ibu gunakan dalam mengajar siswa-siswi? Apakah media tersebut menjadi satu-satunya sumber, ataukah siswa-siswi boleh mencari informasi dari sumber lain?

10. Selama ibu mengajar, apakah ada media *supplementary* yang ibu gunakan untuk membantu meningkatkan kualitas belajar siswa-siswi?

11. Apa pendapat ibu mengenai buku cetak dan sumber internet dalam pembelajaran manusia purba Indonesia?

12. Menurut ibu, media supplementary seperti apa yang cocok untuk menunjang pembelajaran siswa-siswi mengenai materi manusia purba?

13. Bagaimana pendapat ibu mengneai media pembelajaran yang memerlukan koneksi internet seperti *website* bila digunakan di dalam kelas?

14. Informasi apa yang ibu harapkan dalam media belajar supplementary yang interaktif mengenai manusia purba Indonesia?

15. Apa harapan ibu ke depannya untuk siswa-siswi dalam konteks pembelajaran Sejarah Indonesia?

3.3.2.2 In-depth Interview with Cultural Advisers from Sangiran Early Man Museum

An updated and accurate information regarding Indonesia's early humans is needed to create a valid learning media. According to

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UNESCO, Sangiran Early Man Site is one of the key man sites for the understanding of human evolution. Therefore, the author reached out to Sangiran Early Man Museum. The instrument of interview questions is based on a theory by Widianto et al. (2023), i.e.:

1. Apakah pendapat kakak mengenai masalah kurangnya minat belajar Sejarah Indonesia, khususnya mengenai manusia purba Indonesia di antara peserta didik Indonesia?

2. Adakah penemuan yang unik atau berkesan bagi kakak di Sangiran?

3. Ada berapa total fosil yang ditemukan di situs Sangiran? Dan apakah masih dilakukan ekskavasi fosil hingga sekarang?

4. Ada banyak temuan manusia purba di Indonesia, dan setiap manusia purba memiliki karakteristiknya masing-masing. Adakah kebiasaan dari manusia purba tertentu yang spesifik berdasarkan wilayah dan faktor-faktor lainnya?

5. Apakah yang menyebabkan tergantinya Homo erectus arkaik dengan spesies-spesies yang lebih modern?

6. Apakah Pithecanthropus erectus dan Pithecanthropus mojokertensis sama-sama dari spesies Pithecanthropus? Hanya saja berbeda tempat penemuannya?

7. Selain daerah penemuannya dan fisiknya, adakah hal lain yang membedakan antara Homo wajakensis, soloensis dan floresiensis? Contohnya dalam aspek kognitif.

8. Adakah pengetahuan mengenai rentang hidup setiap jenis manusia purba Indonesia? Bila ada, apakah yang mempengaruhi rentang hidup tersebut?

9. Makanan seperti apa yang biasa dimakan oleh manusia purba Indonesia berdasarkan bentuk tengkorak atau rahangnya?

10. Adakah metode yang diketahui digunakan oleh manusia purba Indonesia untuk membersihkan dirinya?

11. Benda apa saja yang esensial bagi manusia purba Indonesia di dalam "rumah"nya?

12. Bagaimana manusia-manusia purba Indonesia berusaha bertahan hidup melawan seleksi alam?

13. Adakah hobi tertentu dari manusia-manusia purba Indonesia yang ditemukan?

14. Adakah kemampuan bersosialisasi dari manusia purba yang diketahui?

15. Menurut kakak, apa kelebihan manusia purba Indonesia daripada manusia modern, baik dalam aspek fisik maupun kognitif?

16. Hal-hal apa saja yang dapat kakak pahami dari kehidupan manusia purba Indonesia?

17. Seberapa berpengaruh Indonesia dalam usaha rekonstruksi kehidupan awal manusia di mata dunia?

18. Menurut kakak. Mengapa generasi muda tetap harus mempelajari sejarah manusia purba Indonesia?

19. Pesan apa yang sekiranya ingin disampaikan oleh kakak sebagai pamong budaya, kepada pengunjung museum dan generasi muda Indonesia, terkait manusia purba Indonesia?

3.3.2.3 In-depth Interview with Game Developer

In order to create an effective gamification website, the author needed to gain knowledge from a professional. The author interviewed Ken Natasha Violeta S.Sn., M.Ds. as a professional game developer. The author obtained valuable tips from the pre-production step to post-production step. The instrument of questions is based on a theory by Supriatna (2021), i.e.:

1. Tahap apa saja yang biasanya kakak lakukan sebelum merancang sebuah *game*?

2. Seperti apakah tahap-tahap perancangan *game* yang kakak lewati?

3. Media yang akan saya rancang bersifat prototype, menurut kakak, bagaimana agar media saya tetap bisa bersifat immersive dengan keterbatasan-keterbatasan tersebut?

4. Menurut kakak, bagaimana cara menciptakan *layout* yang nyaman dan informatif, namun tetap menarik?

5. Bagaimana pendapat kakak bila saya menyisipkan metode *storytelling* dalam media pembelajaran ini?

6. Adakah hal-hal yang kakak hindari atau prinsip-prinsip yang kakak gunakan dalam merancang sebuah *game*?

7. Adakah *tips* dari kakak bagi pemula yang ingin merancang *game*?

3.3.3 Questionnaire

The author distributed the questionnaire to 67 high school students in Xaverius Bandar Lampung High School to gain a quick insight on their perspective about learning Indonesia's early humans' history. The questionnaire contains 19 questions divided into 4 major sections. The author needed respondents who are currently experiencing the Merdeka Curriculum to keep the insight relevant. The instrument of questions is based on a theory by Supriatna (2021) i.e.:

3.3.3.1 First Section

The first section is used to profile the respondents. The respondents' profile might affect the answer they give. Therefore the author needed information about their age and domicile.

Table 3.1 The First Section of The Questionnaire

Question	Type	Answer
Domicile	Multiple choice	Bandar Lampung
		Jabodetabek
Age	Multiple choice	15—18 years old
		19—23 years old

3.3.3.2 Second Section

The second section of the questionnaire is used to gain knowledge on the students' interest, difficulties, and perspective about learning Indonesia's early humans. The answer is either linear or multiple-choice. This section contained 5 questions e.g.:

Table 3.2 The Second Section of The Questionnaire

Question	Type	Category
How much do you enjoy the Indonesia's early humans' history material?	Linear Scale	1 (very not enjoyable)
		2
		3
		4
		5
		6 (very enjoyable)
Which reasoning(s) could possibly make you like the Indonesia's early humans' history subject?	Checkboxes	Revisiting the origins of Indonesia as a nation.
		Learning about Indonesia's growth from beginning to present.
		Learning about how humans progressed from a simple civilization
		Learning about how geographical conditions affected early humans' life aspects
How important is the subject of Indonesia's early humans' history to you?	Linear scale	1 (very unimportant)
		2
		3
		4
		5
		6 (very important)
How hard is it for you to learn the Indonesia's early humans' history?	Linear scale	1 (very easy)
		2
		3
		4
		5
		6 (very hard)
Which reasoning(s) troubled you from learning Indonesia's early humans' history?	Checkboxes	Irrelevant with the current situation.
		The material is too hard to memorize or learn.
		Most of the materials revolved around places or times
		The lack of visual representatives made it boring to learn
		The material's assessment depended on the ability of memorizing rather than understanding

		The material is only focused on the physical characteristic of early humans

3.3.3.3 Third Section

The third section of the questionnaire is used to test the students' knowledge of Indonesia's early humans. Indonesia's early humans were a part of elementary school and middle school history material. This part involved the students' ability to recall memories and test the effectiveness of the previous learning methods. This section contains 6 questions e.g.:

Table 3.3 The Third Section of The Questionnaire

Question	Type	Category
Which Indonesia's early human(s) are you familiar with?	Checkboxes	Meganthropus palaeojavanicus
		Pithecanthropus erectus
		Pithecanthropus mojokertensis
		Homo soloensis
		Homo wajakensis
		Homo mojokertensis
		Homo floresiensis
Early humans were much more capable in surviving than modern humans because they are aware of their surrounding environment and are able to utilize the things around them as they needed. Do you know about it?	Multiple choice	Yes
		No
		Maybe
Do you know that each of early human's brain volume affect their behavior? For example, the bigger the volume, the more they spend time to look and gather food because higher brain volume consumes a lot of energy.	Multiple choice	Yes
		No
		Maybe
How much do you know about the physical aspect of Indonesia's early	Linear scale	1 (physical aspect)
		2

humans rather than their cognitive (mental) capabilities?		3
		4
		5
		6 (cognitive aspect)
What information do you want to know about early humans?	Checkboxes	How the early humans survive.
		Interesting facts about early humans.
		How the early humans think.
		The early humans' brain volume and the cause and effects.
		How the early humans socialize.
		Physical comparison of each early human.
		The visualization of early humans.
Do you know that Indonesia has a lot of internationally influential early man sites? (Sangiran early man site that has been recognized by UNESCO, Trinil early man site, Ngandong early man site, et cetera).	Multiple choice	Yes
		No

3.3.3.4 Fourth Section

The last section of the questionnaire is constructed to obtain knowledge about the learning media that the students have used, and the one that they want to use. This part is used to gain knowledge about the students' preferences in a learning media. This section contains 6 questions i.e.:

Table 3.4 The Fourth Section of The Questionnaire

Question	Type	Category
	Multiple choice	Visual

Which studying method is effective for you?		Auditory
		Kinesthetic
Which media(s) help you to learn Indonesia's early humans' history?	Checkboxes	Textbook
		Internet blogs
		Power Point presentation
		Search engine
		Social media
		Educational game
What kind of supplementary learning media that you want to help you learn Indonesia's early humans?	Checkboxes	Interactive
		Informative
		Storytelling
		Text-oriented
		Image-oriented
		Gamification
Are you interested in using an interactive playable website to learn the history of Indonesia's early humans?	Multiple choice	Yes
		No
		Maybe
If yes, why are you likely to be interested in using said media?	Checkboxes	Learning becomes more interactive.
		Increasing the amount of activity in class to avoid lack of enthusiasm.
		Adding more knowledge that is unavailable in textbooks.
		Easy to access.
		Engaging whilst being used in class.
		Not interested.
What features do you want to be in said interactive website?	Checkboxes	Quiz
		Storytelling
		Mission
		Rewards or point
		Leaderboard or ranking
		Customization

3.3.4 Existing Study

The purpose of studying an existing product is to compare and add uniqueness to the designer's project. The previous product might not be able to fulfill some aspects for the users, hence the author can point out the weaknesses. Besides comparing the weaknesses, the strength of the previous product can be improved and applied to this media. The author planned to analyze 3 existing medias regarding Indonesia's early humans. The first media is a software by Pulau Kreatif channel on YouTube, the second media is news blogs such as Gramedia; DetikEdu; Tirto.id; and Kompas, and the third media is Sangiran Early Man Virtual Museum Tour. These medias are studied by using a SWOT analysis table.

3.3.5 Reference Study

In the design field, reference study is an approach of learning established principles, trends and practices from various sources. The purpose of reference study is to enrich the designer's creativity by revealing diverse ideas and aesthetics to themselves. The designer aims to study the visual and mechanical aspect of the game and find some things that can be combined with the designer's ideas and applied to the project. There are 3 games that the designer aims to study, which are the Race to Ratify; the When Rivers Were Trails; and the Braid Anniversary Edition. These 3 games are studied by using SWOT analysis table.