Gelar: Jurnal Seni Budaya
Vol 21, No. 1, June 2023 pp. 103-114
https://jurnal.isi-ska.ac.id/index.php/gelar/index
E-ISSN 2655-9153

Developing an engaging and effective mascot design for promoting alternative energy source awareness

Devi Kurniawati Homan [a,1*], Nixie Carissa S. Silitonga [a,2], Jonata Witabora [a,3]

[a] Bina Nusantara University, Jl. KH Syahdan No.9, Jakarta and 11480, Indonesia
[1] devi@binus.ac.id*; [2] jowitabora@binus.ac.id; [3] nixie.silitonga@binus.ac.id
* Corresponding Author

ABSTRACT

Alternative energy sources are one of the solutions that can help address the issues of the energy crisis and global climate change. Indonesia has joined other countries in pursuing the implementation of a net-zero emissions policy by 2050. Due to Indonesia's geographic location, which is situated across the equator, the country can benefit from the use of alternative solar energy. According to data from the Ministry of Energy and Mineral Resources, Indonesia's potential solar energy capacity can reach around 4.8 KWh/m2, equivalent to 112.000 GWp, but currently, only about 10MWp is being utilized. This number highlights the need for Indonesia to develop a strategic plan for harnessing its solar energy resources. Visual communication design can play a significant role in the success of this transition. One highly effective form of visual communication is the use of a mascot. A mascot serves as a storyteller; it is memorable and embodies the core values of what it represents. It is a powerful tool for conveying messages to the audience. The creation of this mascot aims to engage the masses in the adoption of alternative energy sources and plays a crucial role in appealing to the emotional aspect of the audience, influencing their decision-making process regarding energy sources. This research focuses on the creative process of designing the mascot's visual representation. Using a three-step design research approach, we have identified the visual elements necessary to develop the mascot's shape, form, color, and characteristics. The resulting mascot design symbolizes a brighter future for energy consumption. It's important to note that this research exclusively addresses the visual aspect of the mascot. Further studies are required to assess the mascot's effectiveness across different forms of media serving specific purposes.

OPEN ACCESS

Article History
Received 2023-04-15
Revised 2023-05-04
Accepted 2023-06-26

Keywords
Alternative Energy Sources;
Solar Energy;
Mascot Design;
Energy Transition;
Indonesia Energy Policy

1. Introduction

Technology and industrial sectors are advancing and growing rapidly in today's increasingly modern world. However, this progress also brings about new challenges that must be addressed. For several decades, most of our energy has been derived from the long-standing and outdated use of coal, oil, and natural gas. We have relied on these non-renewable energy sources for an extended period, resulting in substantial environmental damage and destruction. Today, the world is confronted with an energy crisis due to the excessive use of fossil fuels, and the resulting emissions are driving climate change, making our living environment increasingly unbearable. New alternative energy sources have the potential to offer a solution to this global problem. This new direction requires full support from governments, policymakers, politicians, industries, private companies, institutions, and communities. Indonesia is no exception; in the near future, the energy needs of its people will likely fall short of meeting the growing demands of the Indonesian population. Countries worldwide have committed to implementing a net-zero emission policy by 2050 to combat the climate change crisis.

 ISSN 2655-9153

Given that the energy sector is a significant contributor to emissions, it is imperative to prioritize energy transition policies that emphasize alternative energy sources and low-carbon technologies. Indonesia's geographical location, straddling the equator, positions it to harness the benefits of solar energy [1]. Solar power harnesses energy from sunlight and can be converted into electricity using photovoltaics (PV), concentrated solar power, or a combination of both methods. This potential new energy source can be developed as an affordable, efficient, and reliable power source, given Indonesia's tropical climate with abundant sunshine throughout the year [2]. According to data from the Ministry of Energy and Mineral Resources, Indonesia's solar energy potential could reach approximately 4.8 KWh/m2 or the equivalent of 112,000 GWp, yet currently, only about 10MWp is being utilized [3]. This statistic underscores the need for Indonesia to formulate a strategic plan to harness this promising alternative energy source effectively. A well-executed strategic plan has the potential to reduce Indonesia's emissions by 2050 significantly. Public awareness plays a vital role in supporting the initiation of this strategic plan. Social campaigns can increase public awareness and garner support for this energy transition. Visual communication design can be an integral part of this strategic plan—a means of strategic communication that engages people, families, small industries, large industries, and all communities, fostering awareness and critical thinking regarding their energy consumption while highlighting the potential of alternative energy sources. This research has a primary goal: to develop a mascot design that not only represents a renewable energy source but also forges an emotional bond with its audience through distinct visual elements. Achieving success in this endeavor hinges on taking into account key factors like expression, behavior, and identity [4]. The design must captivate and possess the ability to convey a broad spectrum of emotions, ensuring effective communication of its intended message. It's worth noting that intellectual property rights have also evolved to encompass diverse forms of media communication, including mediums like comics and animation, among others.

Several studies have explored mascot design, particularly emphasizing establishing meaningful connections with the target audience. In a significant research project conducted by Fathoni *et al.,* they explained how they used design thinking principles to create a mascot that resonated with the target market's preferences. Specifically, they focused on designing the event mascot "We Love Design" for Bina Nusantara University, and they selected the Sumatran tiger cub as the mascot's form due to its popularity in public opinion polls and embodiment of local Indonesian culture. The research conducted by Fathoni *et al.* contributes to system innovation, streamlining the process of developing brand characters, especially mascots. Fathoni *et al.* employed an approach that included polling 724 and 1,018 respondents, which can be applied to other character designs and licensing strategies to ensure sustainability [5]. Kusuma *et al.* researched the use of mascots during the COVID-19 pandemic in Indonesia. Their research aimed to identify the misuse of visual assets in this era. The findings from Kusuma *et al.* research explain the crucial role mascots play when associated with the pandemic, as their presence as a communication medium changes how messages are delivered. According to the research results, using mascots to convey messages has effectively reduced community resistance during the pandemic. Kusuma *et al.* study demonstrates that the benefits of effective information absorption in the region increase when mascots are designed and implemented as part of integrated communication strategies by local governments affected by the pandemic [6].

Furthermore, Stricklin *et al.* were involved in the exploration of Party Mascot: Experimental Prop Design for Live Streaming. The research findings reveal that Party Mascot, designed as a dynamic interactive prop for streaming "live games" on the Twitch platform, can extend audience engagement beyond a mere chat interface to a physical playroom. Its primary goal is to transition viewers from the screen to the real world, reshaping viewer-player relationships and opening up new game design and experimentation possibilities in the live gaming genre. This Party Mascot can seamlessly accommodate any number of participants and adapt to various roles within this innovative, mediated performance context. Its design allows it to seamlessly shift between moments of social interaction, gameplay, and fiction, enhancing the immersive experience for both players and viewers [7]. Palladino *et al.* conducted a study examining how Olympic mascot design elements impact fans' perceptions, attitudes, and

 ISSN 2655-9153

purchase intentions. The research aimed to understand the influence of Olympic mascot design elements on fans and found that animal mascots scored significantly higher than abstract mascots regarding design perception, attitude, and purchase intention. Specifically, the study revealed that the choice between anthropomorphic animals and abstract mascots significantly affects how fans perceive their attitudes toward and intention to purchase Olympic mascot merchandise [8]. Kongdee *et al.* employed a modern approach to design educational institution mascots, integrating elements of local culture, organizational culture, community theory, art and design, and organization-specific frameworks. The research findings demonstrate that crafting mascots that blend contemporary art and design can effectively establish a unique identity for an organization and enhance its image. The research suggests a new methodology for developing educational institution mascots that incorporate elements of social culture, educational frameworks, marketing, art, and design [9].

The research "Developing an engaging and effective mascot design for promoting alternative energy source awareness" delves into a distinct field of study compared to the previously mentioned research articles. While prior research has explored mascot design in various contexts, such as event promotion, pandemic communication, and fan engagement, the "Developing an engaging and effective mascot design for promoting alternative energy source awareness" research uniquely focuses on the use of mascot designs to enhance awareness and support for renewable energy sources. This is particularly relevant in the context of Indonesia's energy crisis. This research offers a specific method for utilizing mascot designs to promote environmental sustainability and facilitate the transition from fossil fuels. It highlights the significance of mascot design within the realms of sustainability, energy policy, and public awareness. The article underscores the potential of mascot designs to contribute to addressing a critical global issue, namely the shift toward eco-friendly energy sources, setting it apart from the other mentioned research articles. Essentially, this research serves as a bridge between the fields of environmental sustainability and design, with the overarching goal of fostering societal support for renewable energy initiatives.

2. Method

This research is based on three-step design research by Neil Leonard and Gavin Ambrose, Fig. 1 a primary, secondary, and tertiary research [10]. It is a visual research method to ensure the visual is in line with the content and context intended. In the primary research, all data related to the issues were collected. Using mind mapping we put the data within the structure, to reveal the relation between topics or issues, to see the whole picture, and to identify all the keywords that can help later in the ideation and visual stage. In secondary research, we then try to connect the data with a visual representation. It is an investigation into ideas, an explorative step to try different visual solutions to the problem. it is an active and quick process of plotting out initial ideas as much as possible and testing them against each other. It is important to use different types of sketches to communicate the ideas quickly. Within this step, visual references are important as guidance to bring a new approach to the design. Tertiary research concludes all the findings and the exploration into one visual solution.

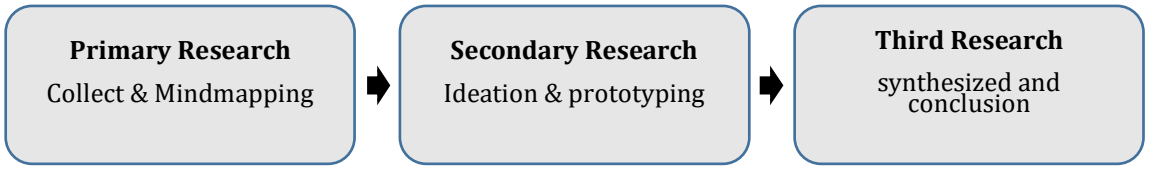

Fig. 1. Three-step design research

2.1. Data Collection

Since 2004, Indonesia has ceased to be an oil exporter due to a significant decrease in oil production. During this period, the use of fossil fuels has increased by 60%, necessitating Indonesia's reliance on oil imports to meet domestic energy demands. The country has yet to fully leverage its substantial renewable energy potential, except for hydropower, which has already generated 4.2 GW, and geothermal energy, which has contributed 0.8 GW to the energy

 ISSN 2655-9153

mix. The high costs associated with alternative energy sources, such as Solar PV, wind, and micro-hydro, have hindered their adoption, primarily due to their inability to compete with fossil fuel prices. The introduction of the new National Energy Policy, outlined in Government Regulation No. 79 of 2014, prioritizes the achievement of energy independence and national energy security to support sustainable national development [3]. The Government of Indonesia pursues a multifaceted approach to developing renewable energy power plants, encompassing both commercial and non-commercial dimensions. Commercial aspects entail the development of renewable energy power plants by independent power producers (IPPs), industries, or communities without reliance on government grants. These initiatives may involve connections to, or independence from, the national grid managed by PT.PLN is a state-owned electricity company. The non-commercial aspect pertains to the broader scope of renewable energy development throughout Indonesia, leveraging the nation's abundant renewable energy resources dispersed across the country. Notably, the Eastern part of Indonesia offers distinct advantages for renewable energy over fossil fuels due to abundant resources and the absence of transportation costs. Drawing upon data from the Ministry of Energy and Mineral Resources - Republic of Indonesia, we created a mind map (Fig. 2) to visualize the associated challenges. Mind mapping is a graphical technique for linking key concepts through images, lines, and information. It provides a visual representation of ideas, aiding in the organization, collection, and retention of information. Mind mapping proves to be a valuable method for brainstorming and enhancing cognitive processes.

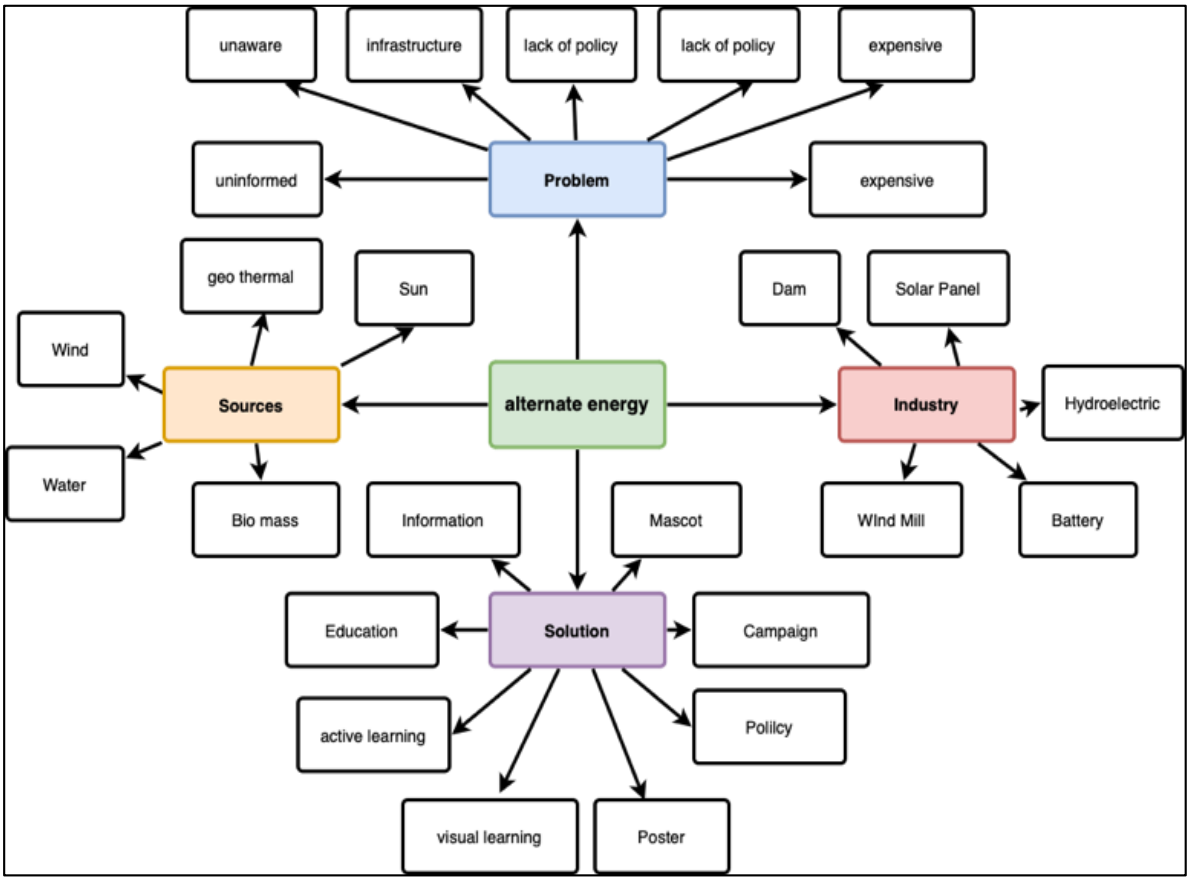

Fig. 2. Mind mapping

2.1. Reference image

After completing the mind mapping process, we gathered all the visual information related to the problem and the findings from the mind map. This included a comprehensive selection of relevant visuals to serve as a starting point for exploring character design ideas for the mascot. In Fig. 3, we collected data on the production and construction of solar panels, including their structure and other related aspects. Additionally, we gathered various existing mascots,

 ISSN 2655-9153

specifically those associated with energy or renewable energy, encompassing various visual styles. These diverse styles will be compared during the ideation stage. Examining this diverse array of existing mascots allows designers and creative teams to draw inspiration from different visual styles, concepts, and approaches. Exposure to various designs can stimulate new and innovative ideas for crafting a distinctive and engaging mascot for renewable energy initiatives. Furthermore, analyzing existing mascots yields insights into what has been effective or ineffective in the past within the context of energy-related branding. This research helps us identify market trends, gaps, and opportunities. By collecting a variety of mascots, we can consider a broad spectrum of target demographics. A well-designed mascot should have broad appeal and effectively engage its intended audience. This examination of different mascots also aids in identifying unique design elements and strategies that can set our mascot apart from competitors. Renewable energy mascots must be carefully assessed to ensure alignment with the messaging and values of the brand or initiative. Analyzing existing mascots helps us evaluate how effectively different visual styles convey the desired message and ethos. Collecting a diverse assortment of mascots provides us with a historical perspective on the evolution of mascot design within the energy sector. This historical understanding can inform our decisions regarding embracing or departing traditional design elements.

Fig. 3. Refference images

3. Results and Discussion

3.1. Basic shape

Basic shapes hold significant importance in the early stages of mascot design as they provide a foundational framework for the entire creative process. These simple forms are easily recognizable and can serve as the fundamental building blocks upon which the mascot's design will be constructed. By starting with basic shapes, designers simplify the initial stages, allowing them to focus on core concepts without becoming entangled in intricate details [11]. This simplicity ensures that the mascot's design maintains clarity and conveys its intended message effectively. Basic shapes also play a pivotal role in ensuring the mascot's visual language is universally understood [12]. Each shape carries specific associations and emotional connotations that transcend cultural and linguistic boundaries [13]. For instance, squares convey stability and trustworthiness, triangles suggest movement and energy, and circles represent unity and positivity [14]. Selecting the appropriate shape at the outset sets the initial tone for the mascot's personality and helps align its visual elements with the desired traits and attributes. This universal recognition and emotional resonance are crucial for effective mascot design [15]. Moreover, working with basic shapes provides designers with a creative constraint that often sparks innovation. These constraints encourage designers to explore unique solutions and design choices within defined parameters. Additionally, basic shapes offer versatility and adaptability, allowing for the creation of various iterations and design variations while maintaining a cohesive visual identity [16]. This versatility, combined with the efficiency gained

 ISSN 2655-9153

by starting with simple shapes, streamlines the design process, saving time and effort during the early stages. As the mascot evolves, these foundational shapes serve as a visual anchor that ensures consistency and recognizability across different applications and contexts.

In this study, we employed keywords and visual data to develop a visual concept for renewable energy mascots. The initial step involves translating all the findings into a specific shape to convey the desired appearance. It is crucial to understand how elements of shapes can significantly impact our perception and convey nuanced meanings. Different shapes or forms evoke distinct interpretations [17]. The more we grasp how particular shapes can convey specific impressions and emotions, the more potent and effective our visual representation will be. In the early stages of crafting a mascot, three fundamental shapes are commonly utilized: Square, Triangle, and Circle (as depicted in Fig. 4). A square, defined as a quadrilateral with four sides and four equal angles measuring 90 degrees, is closely associated with the perception of stability, trustworthiness, honesty, order, conformity, security, equality, and masculinity. It is often employed to portray characters as strong and dependable, a trait frequently seen in superhero characters. A triangle, characterized by its three sides and three angles, symbolizes movement, action, energy, aggression, and sharpness. A character shaped like a triangle may be perceived as more cynical or suspicious. A circle, distinguished by its absence of corners or edges and its continuous closed line, represents completeness, gracefulness, playfulness, unity, protection, and positivity. Characters with circular shapes are often depicted as friendly, childlike, cuddly, warm, and cute, evoking positive sentiments effortlessly [18]. For instance, think of Santa Claus with his jovial face, rotund figure, or a baby animal resembling a round fur ball. In various depictions, attractive women are associated with curves and circles. Infants, as seen in their basic form, heavily feature round shapes. However, it is important to note that in different contexts, a circle can also convey loneliness, emptiness, magic, and mystery [19]. Understanding the foundational shapes, alongside considerations of facial expressions, hand gestures, and appropriate poses, plays a pivotal role in creating a mascot with the intended character [20], whether strong, malevolent, or endearing.

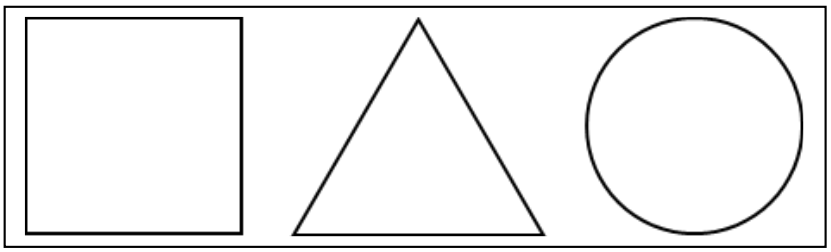

Fig. 4. Basic shape (Square, Triangle, Circle)

3.2. Superhero

Superheroes serve as a potent foundation for designing renewable energy mascots, carrying a powerful symbolic message of strength and influence. Superheroes embody iconic representations of individuals possessing extraordinary abilities capable of profoundly impacting the world [21]. By associating renewable energy with these superhero figures, we effectively communicate the idea that renewable energy sources hold the potential for substantial positive change, exerting a significant influence on our planet. This connection is a source of empowerment and motivation, encouraging audiences to adopt renewable energy solutions to harness their power for the greater good. The choice of superheroes as mascots is deliberate. Superheroes are universally recognized and relatable figures within popular culture, transcending generational divides [22]. They hold a unique place in the hearts of people of all ages, thanks to their prevalence in comic books, movies, and television shows [23]. Incorporating superheroes into mascot design instantaneously captures the audience's attention and establishes a deep and meaningful connection [24]. This familiarity and relatability offer a distinctive opportunity to engage and educate audiences about renewable energy in a memorable manner. Furthermore, superheroes embody positive values such as

 ISSN 2655-9153

justice, integrity, and responsibility [25], rendering them ideal role models for promoting responsible energy usage and sustainable practices.

Superheroes are also renowned for their visually striking and iconic designs, readily adaptable for creating visually appealing renewable energy mascots that stand out and attract attention [26]. These mascot designs often prioritize versatility, making them well-suited for seamless integration into various marketing and educational materials. Moreover, superheroes uniquely appeal to younger audiences [27], rendering them a potent tool for the education and inspiration of the next generation, encouraging them to develop environmental consciousness and embrace renewable energy solutions early on. By establishing a connection between renewable energy and the aspirational, visually captivating world of superheroes, we can cultivate a sense of responsibility and motivation, nurturing champions for a sustainable future. In addition, it is worth noting that the concept of superheroes as popular comic figures has existed since the late 1930s, gaining momentum during the Great Depression era in the United States [28]. This period marked when people yearned for a positive spirit to instill hope amidst dire circumstances. Comics solved this need, giving birth to beloved superheroes who continue to endure today [29]. Even before the golden age of popular superheroes, humans sought superhero figures for survival, creating religious, mythological, and legendary tales that became integral parts of our culture and civilization. Gods, goddesses, and mythical creatures are superhero-like characters with powers beyond human imagination. In Indonesian traditions, particularly Hinduism, such influences can be traced to ancient stories, artifacts, and architectural designs. The tradition of Wayang, for instance, features numerous superhero characters within its grand epic, each distinguished visually by symbols and signs that represent their personality and power. This underscores the fact that Indonesia, too, possesses its tradition of superheroes. Utilizing superhero characters in contemporary Indonesian represents a viable and culturally resonant solution.

3.3. Preliminary design

Electricity serves as a fundamental and universally relevant theme that transcends geographical boundaries. It plays a central role in modern life, providing power for homes, industries, transportation, and technology. By selecting electricity as the theme, the mascot design taps into a topic that resonates with people worldwide. It underscores the global importance of sustainable energy solutions, especially in an era of increasing environmental awareness and the imperative to reduce carbon emissions. The theme of electricity aligns with a crucial contemporary challenge -the transition to clean and renewable energy sources for a sustainable future. The educational potential and awareness-building aspect of electricity can be enhanced through this theme because electricity offers a platform for disseminating valuable information about renewable energy and energy conservation. Through the mascot, educational initiatives can highlight the benefits of renewable energy sources such as solar, wind, and hydropower, shedding light on their positive environmental impact and potential to reduce reliance on fossil fuels. Additionally, the mascot can advocate for energy efficiency, encouraging individuals and communities to adopt responsible energy consumption practices. By choosing electricity as the theme, the mascot design becomes a powerful tool for spreading knowledge and inspiring action in sustainable energy. Electricity's visual appeal is captivating, with its characteristic lightning bolts, sparks, and energy flow patterns. These visual elements can be incorporated into the mascot design to create an eye-catching and memorable character. The theme's inherent dynamism and energy lend themselves well to conveying the idea of progress, innovation, and positive change associated with adopting renewable energy sources.

Furthermore, electricity as a theme offers versatility in design, allowing for creative interpretations that can be adapted to various marketing materials, educational campaigns, and outreach efforts. The mascot possesses the visual allure to capture the imagination of audiences and reinforce the message that renewable energy is not only sustainable but also electrifying in its potential to transform our world for the better. Why was electricity chosen as the foundational design theme? Electricity was selected as the core design theme because it represents a pivotal energy source, and our reliance on fossil fuels for electricity generation still outweighs our utilization of alternative energy sources like solar and wind. Our goal was to translate the concept of electricity and its various aspects into a visual solution applicable to our

 ISSN 2655-9153

mascot. Employing an iconic approach in character development [30], we established an initial direction for the visual elements that could be applied. The visual design needed to be easily recognizable and comprehensible, distinctive and appealing, and create a lasting impression as a character. It was essential for the audience to relate to its design, increasing the likelihood of establishing a connection and influencing their decision-making. Lidwell's principles of consistency in visual design were also considered [31]. The mascot's visual representation must align consistently with the intended concept and purpose. Consistency in style and language across different contexts and applications was essential. Even as the mascot expressed various emotions and reacted to different situations, it had to maintain a consistent demeanor. Like other visual arts, mascots are influential persuasion tools [32]. They can influence how people think, feel, and act. In this context, a mascot can shape public perception and educate the public [33] about the benefits of using alternative energy sources for a brighter future.

3.4 Sketching Process

Sketching is the first step in the visualization stage. It is the act of exploring and documenting inspiration and possible solutions. It takes cues from the research and builds visual thought and narrative. It is a constant and irritating process until it narrows down to the best possible solution for the visual problem. Fig. 5 shows the first visual exploration of the character design.

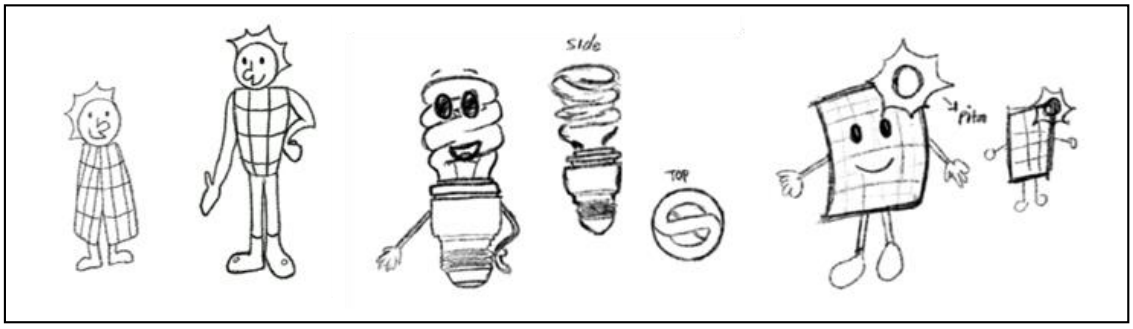

Fig. 5. Preliminary sketch

Using electricity as the main idea, we then developed the shape accordingly. We try several visual solutions using objects that are closely related to electricity. The first alternative is using human characters with hair that mimics the sun or light, and clothes made for solar panels. Although is easily recognized, it is a less interesting approach. The second alternative is using a light bulb shape. Light bulb is easily recognized, but the shape is not directly related to strength, and with its spiraling shape is not easy to put a facial expression on it. The third is a non-humanoid character with a simple square shape correlated with the shape of a solar panel, which is then selected to be developed into a more comprehensive sketch Fig. 6. From the simple square shape sketch, we then try to give more details. We give volume on it to see how it will look in 3D space with different points of view. We try different color combinations. We try different poses and see which one works and which one does not. We try different limb designs and proportions, giving different styles of attributes. We try to get a superhero look yet a friendly figure that can relate to many different audiences.

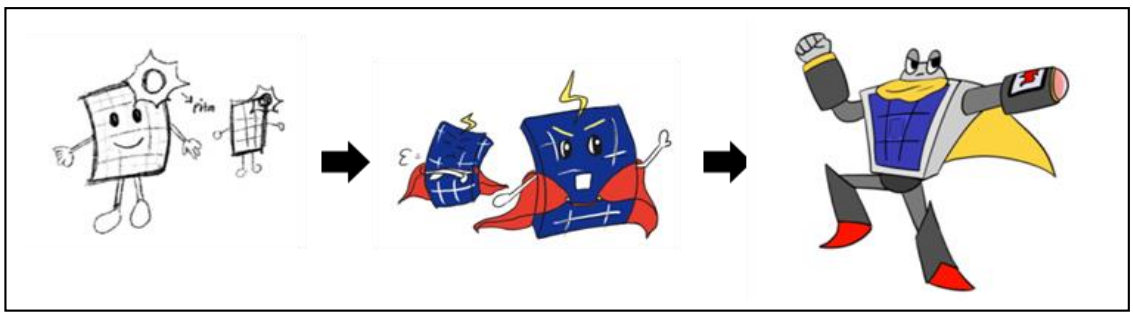

Fig. 6. Comprehensive sketch

 ISSN 2655-9153

3.5. Final Design

The final design, Fig. 7, utilizes a square shape to give the impression of stability, trustworthiness, honesty, and security. It uses a 'baby' like proportion which the head is proportionally bigger than other limbs to create a cute impression that helps induce a positive emotion. The square pattern or grid on the front is easily recognizable as a solar panel, a direct visual cue of an alternative energy source. The added styling of electrical shapes both on the side of the head and at the hand creates a more dynamic, modern, and powerful impression of a character. The boots and the robe complete the whole appearance of a superhero costume.

.

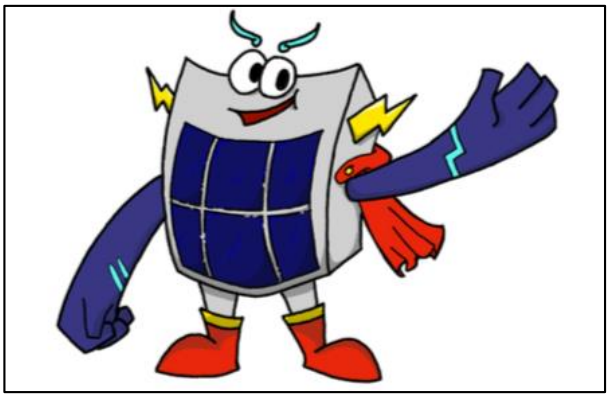

Fig. 7. Final mascot design

The facial expression was designed to show a strong, enthusiastic, and dependable character. The simplicity of the design of the eyebrow, eyes, and mouth allows a greater range of manipulation for showing many different expressions and emotions Fig. 8. The mascot dominates with the combination of blue and grey. It gives the mascot a futuristic appeal that is in line with the theme of alternative energy sources.

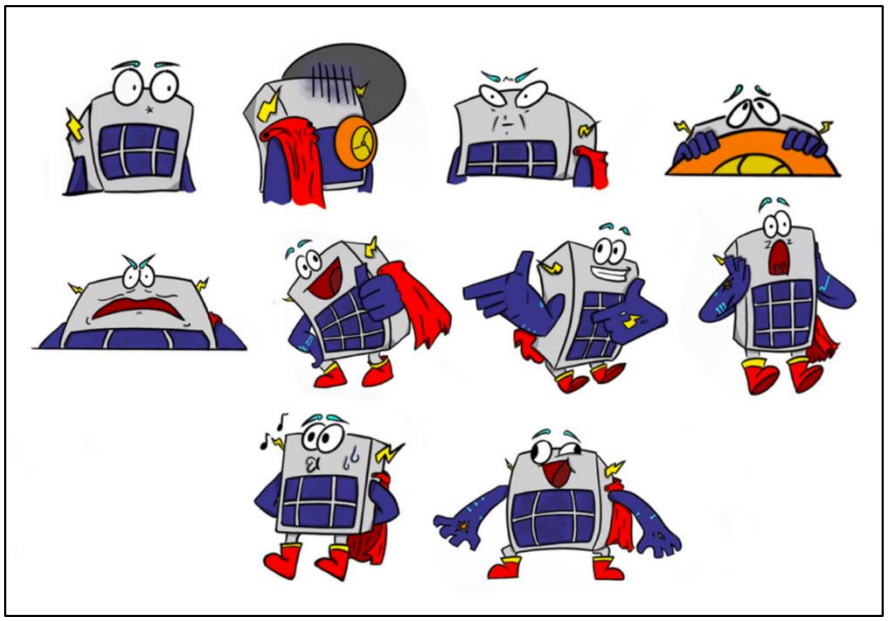

Fig. 8. Different expression and pose of the Mascot

4. Conclusion

The result of the design of the mascot is visually in line with the theme of alternate energy sources. The shape, facial expression, and gesture implied a friendly and strong character, symbolizing the hope of a better future of energy consumption by promoting alternative energy sources. Its character is easily suitable for the modern and contemporary audience. The design of the mascot is believed able to communicate the importance of alternate energy sources, thus

 ISSN 2655-9153

benefiting the Indonesian government's aim to lower its emissions in 2050. The design process in this research is hoped to become a reference study in how to develop a mascot design and its possible use as an intellectual property product in the future. To be an intellectual property product is not enough just to have one character. The next stage of research is needed to design and develop other supporting characters to interact with the main mascot in order to deliver more engaging messages related to alternative energy sources. It also needs a designed world where all these characters live and interact to achieve a continual and active story.

Acknowledgment

This research presented objectively and based on the study from BINUS University Enrichment program. We would like to thank BINUS University for their support and all the parties who have supported this research process.

Declarations

Author contribution	:	All authors contributed equally in this research
Funding statement	:	There is no funding for the research.
Conflict of interest	:	The authors declare no conflict of interest.
Additional information	:	No additional information is available for this paper.

References

[1] N. A. Handayani and D. Ariyanti, "Potency of Solar Energy Applications in Indonesia," *Int. J. Renew. Energy Dev.*, vol. 1, no. 2, pp. 33–38, Jul. 2012, doi: 10.14710/ijred.1.2.33-38.

[2] I. M. of E. and M. Resources, *Handbook of Energy and Economic Statistics of Indonesia*. Jakarta, 2021.

[3] F. S. Farhad Mahmoody, I. A. Heritiana Razafindrakoto, Nawa Raj Dhakal, and N. W. Fitria Yuliani, *A Brief Summary of Good Practices and Challenges on Renewable Energy Development in Afghanistan, Indonesia, Madagascar and Nepal*. Jakarta: Indonesian Ministry of Energy and Mineral Resources and Indonesian Ministry of State Secretary, 2021.

[4] P. Kusuma and D. W. Soewardikoen, "City Mascot as A Supporting Force in City Imaging," in *Proceedings of the 4th Bandung Creative Movement International Conference on Creative Industries 2017 (4th BCM 2017)*, 2018, pp. 388–394, doi: 10.2991/bcm-17.2018.77.

[5] A. F. C. A. Fathoni, "Design Thinking for Sustainable Mascot Character Design," *E3S Web Conf.*, vol. 388, p. 01025, May 2023, doi: 10.1051/e3sconf/202338801025.

[6] P. Kusuma and M. D. Marianto, "Mascot: An alternate method to prevent the misuse of visual assets in Indonesia's Covid 19 prevention campaign," *Int. J. Vis. Perform. Arts*, vol. 4, no. 1, pp. 53–60, 2022. doi: 10.31763/viperarts.v4i1.656

[7] C. Stricklin, X. Li, and M. Nitsche, "Party Mascot: Experimental Prop Design for Streaming Actual Plays," in *ACM International Conference on Interactive Media Experiences*, 2022, pp. 369–374, doi: 10.1145/3505284.3532986.

[8] A. Palladino, M. Lee, and X. Zhou, "An Analysis of Olympic Mascot Design Toward Attitude and Purchase Intention," *Int. J. Sport Commun.*, vol. 15, no. 3, pp. 190–196, Sep. 2022, doi: 10.1123/ijsc.2022-0052.

[9] N. Kongdee, S. Prapawong, and J. Manissaward, "The Designing of Institute's Educational Mascots," in *2020 Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON)*, 2020, pp. 287–291, doi: 10.1109/ECTIDAMTNCON48261.2020.9090707.

[10] N. Leonard and G. Ambrose, *Basics Graphic Design 02: Design Research: Investigation for Successful Creative Solutions*. Bloomsbury Publishing, 2017.

[11] J. Hao and W. Xue, "Study on the Application of Mongolian Cultural Elements in Mascot Design," *J. Archit. Res. Dev.*, vol. 5, no. 2, pp. 1–12, Apr. 2021, doi: 10.26689/jard.v5i2.1952.

[12] M. Applegate and J. Cohen, "Communicating graphically: Mimesis, visual language, and commodification as culture," *Cult. Polit.*, vol. 13, no. 1, pp. 81–100, Mar. 2017, doi: 10.1215/17432197-3755204.

[13] C. Spence and G. Van Doorn, "Visual communication via the design of food and beverage packaging," *Cogn. Res. Princ. Implic.*, vol. 7, no. 1, p. 42, Dec. 2022, doi: 10.1186/s41235-022-00391-9.

[14] E. Liberman-Pincu, Y. Parmet, and T. Oron-Gilad, "Judging a Socially Assistive Robot by Its Cover: The Effect of Body Structure, Outline, and Color on Users' Perception," *ACM Trans. Human-Robot Interact.*, vol. 12, no. 2, pp. 1–26, Jun. 2023, doi: 10.1145/3571717.

[15] Y. Wang, "Research on the Positioning of Color in Hamburg's Corporate Image Design," *Int. J. Educ. Humanit.*, vol. 10, no. 2, pp. 193–196, Sep. 2023, doi: 10.54097/ijeh.v10i2.11639.

[16] K. Shea and J. Cagan, "The design of novel roof trusses with shape annealing: assessing the ability of a computational method in aiding structural designers with varying design intent," *Des. Stud.*, vol. 20, no. 1, pp. 3–23, Jan. 1999, doi: 10.1016/S0142-694X(98)00019-2.

[17] N. Crilly, J. Moultrie, and P. J. Clarkson, "Shaping things: intended consumer response and the other determinants of product form," *Des. Stud.*, vol. 30, no. 3, pp. 224–254, May 2009, doi: 10.1016/j.destud.2008.08.001.

[18] J. (Bill) Xu, L. Yan, and S. Pratt, "Destination image recovery with tourism mascots," *J. Destin. Mark. Manag.*, vol. 25, p. 100732, Sep. 2022, doi: 10.1016/j.jdmm.2022.100732.

[19] B. Tillman, "Shapes and Silhouettes," in *Creative Character Design*, Elsevier, 2011, pp. 67–84. doi: 10.1016/B978-0-240-81495-7.00005-2

[20] P. Knight, I. Freeman, S. Stuart, G. Griggs, and N. O'Reilly, "Semiotic representations of Olympic mascots revisited," *Int. J. Event Festiv. Manag.*, vol. 5, no. 1, pp. 74–92, Mar. 2014, doi: 10.1108/IJEFM-03-2012-0010.

[21] Y.-W. Chen, L. Li, and S. Lou, "'The Superhero in Our Hearts Is Chairman Mao': The Structurating of Chinese Sojourners' Conceptualizations of (Super)Hero Identities," *Howard J. Commun.*, vol. 27, no. 3, pp. 218–235, Jul. 2016, doi: 10.1080/10646175.2016.1169956.

[22] N. Shyminsky, "'"Gay"' Sidekicks: Queer Anxiety and the Narrative Straightening of the Superhero," *Men Masc.*, vol. 14, no. 3, pp. 288–308, Aug. 2011, doi: 10.1177/1097184X10368787.

[23] R. Voelker-Morris and J. Voelker-Morris, "Stuck in tights: mainstream superhero comics' habitual limitations on social constructions of male superheroes," *J. Graph. Nov. Comics*, vol. 5, no. 1, pp. 101–117, Jan. 2014, doi: 10.1080/21504857.2014.889732.

[24] R. Kaur, "Atomic comics: Parabolic mimesis and the graphic fictions of science," *Int. J. Cult. Stud.*, vol. 15, no. 4, pp. 329–347, Jul. 2012, doi: 10.1177/1367877911422860.

[25] B. M. Giaimo, "Confucius Americanus: The Junzi 君子 (The Confucian Superhero) Headlines a New American Slang Translation of The Analects," *Int. Commun. Chinese Cult.*, vol. 7, no. 1, pp. 31–51, Mar. 2020, doi: 10.1007/s40636-020-00172-3.

[26] B. Davis, "All-Negro Comics and the Birth of Lion Man, the First African American Superhero," *Inks J. Comics Stud. Soc.*, vol. 3, no. 3, pp. 273–297, 2019, doi: 10.1353/ink.2019.0023.

[27] G. Schott, "From fan appropriation to industry re-appropriation: the sexual identity of comic superheroes," *J. Graph. Nov. Comics*, vol. 1, no. 1, pp. 17–29, Jun. 2010, doi: 10.1080/21504851003798405.

[28] M. Pellitteri, "Alan Moore, Watchmen and some notes on the ideology of superhero comics," *Stud. Comics*, vol. 2, no. 1, pp. 81–91, Jul. 2011, doi: 10.1386/stic.2.1.81_1.

[29] E. Avery-Natale, "An analysis of embodiment among six superheroes in DC Comics," *Soc. Thought Res.*, Jan. 2013, doi: 10.17161/STR.1808.12434.

[30] V. Radomskaya and P. L. Pearce, "Adding character: The role of destination mascots in tourism development," *Tour. Manag.*, vol. 84, p. 104248, Jun. 2021, doi: 10.1016/j.tourman.2020.104248.

 ISSN 2655-9153

[31] W. Lidwell, K. Holden, and J. Butler, *Universal principles of design, revised and updated: 125 ways to enhance usability, influence perception, increase appeal, make better design decisions, and teach through design*. Rockport Pub, 2010.

[32] P. Yadav, H. Mehta, and D. Bisoyi, "A Study on the Impact of Visual Metaphor in Mascot Across Culture," in *International Conference on Research into Design*, 2023, pp. 31–39, doi: 10.1007/978-981-99-0428-0_3.

[33] C. R. King, E. Staurowsky, L. Davis-Delano, and L. Baca, "Sports mascots and the media," in *Routledge Online Studies on the Olympic and Paralympic Games*, vol. 1, no. 46, 2012, pp. 605–623. doi: 10.4324/9780203873670_chapter_33