



DEVELOPMENT OF THE LOCAL WISDOM-BASED "JAGATE" BOARD GAME FOR TEGAL TOURISM LITERACY

Hardian, Robby¹; Roni Darpono².

¹ Department of Visual Communication Design, Vocational School, Universitas Harkat Negeri

² Department of Electrical Engineering, Vocational School, Universitas Harkat Negeri

Article Info

Article History
Received: Juni 2026
Approved: July 2026
Published: August 2026

Keywords:

**Board Game, Jagate,
Local Wisdom,
Tourism Literacy,
Tegal Regency**

Abstract

This study aims to develop and evaluate JAGATE, a local wisdom-based educational board game designed to support tourism literacy among youth in Tegal Regency. The study employed a Research and Development (R&D) approach using the ADDIE framework combined with descriptive qualitative and quantitative analysis. Local tourism destinations, spatial information, and Tegal linguistic elements were translated into a Modular Tile-Laying System comprising 180 hexagonal tiles, 12 destination representations, the "Muter Dalan" route-manipulation mechanic, and the "Tile Paran" destination system. Preliminary data involving 75 youth respondents indicated limited familiarity with the region's tourism potential. Playtesting and pre-test–post-test evaluation subsequently showed an increase in tourism-literacy scores of at least 30%. The findings suggest that embedding local geographical and linguistic knowledge directly into strategic gameplay can provide a participatory medium for tourism learning. JAGATE therefore contributes a game-based visual communication approach in which local knowledge functions not merely as visual content but as an integral component of the interaction and learning system.

© 2026 Universitas Negeri Semarang

✉ Correspondence address: Diploma 3 Visual Communication Design
Department of Vocational School, Universitas Harkat Negeri
Email: robby.hardian@poltektegal.ac.id

INTRODUCTION

Tegal Regency possesses an abundant potential of natural and cultural wealth, ranging from prominent natural tourist attractions such as Guci and Cacaban Reservoir to significant historical heritage at the Semedo Site. Tegal Regency has long been widely recognized as a region with strong tourism potential. However, rapid modern developments pose a serious challenge regarding the dissemination of tourism information to the younger generation. Empirical data indicates that although Tegal Regency has 74 potential tourism sites (Hidayattullah et al., 2024), approximately 70% of the local youth are familiar with fewer than 10 attractions. This information gap stems from the dominance of conventional promotional media, such as e-books and videos, which are passive and lack participation, thus failing to build long-term memory retention.

One relevant approach to bridging this information gap is utilizing game-based learning as an interactive instructional communication medium. This approach is grounded in the characteristics of the current younger generation, who tend to be more adaptive toward inclusive and participatory visual learning media (Harahap et al., 2025). Among various game-based learning instruments, board games emerge as an exceptionally effective medium for conveying information in an enjoyable manner. Board games do not merely serve as entertainment tools; they also carry a strong educational role in introducing history, cultural values, and spatial knowledge across generations (Zefanya, 2025).

In this study, tourism literacy is understood as the ability of individuals to recognize tourism destinations, understand their geographical relationships, identify their distinctive tourism attributes, and connect such knowledge with the local cultural context. Tourism literacy therefore extends beyond merely recalling destination names; it involves spatial, informational, and cultural understanding that enables individuals to construct a more comprehensive mental representation of their local tourism environment. Within the JAGATE board game, these dimensions are translated into destination recognition, spatial-route exploration, destination-related information, and the use of Tegal linguistic elements during gameplay.

Previous studies have confirmed the effectiveness of board games as educational media and cultural introduction tools. For instance, studies demonstrate that designing board games with local themes can significantly increase history information retention and strengthen players' cultural awareness (Wibowo & Agustin, 2022). These findings serve as a solid foundation that a similar strategy can be implemented to address low regional tourism literacy through a structured, interactive gameplay approach.

Currently, Tegal Regency lacks an interactive board game medium specifically designed to introduce its tourism potential to the younger generation. Furthermore, the development of existing educational board games remains dominated by general subject introductions, conventional Monopoly mechanics, or formal school subjects (Bashori, 2023; Putri & Agustin, 2022). This lack of innovation risks inducing boredom among youths accustomed to the complexity of modern gaming. Therefore, a novelty in dynamic game mechanics is required to ensure an effective and sustainable tourism information transfer process.

Local wisdom in this study is not treated merely as a decorative theme applied to the visual appearance of the game. Rather, it functions as a content and interaction framework through which local geographical knowledge, tourism narratives, and Tegal linguistic characteristics are embedded into the gameplay. Accordingly, the local wisdom-based approach is operationalized through three interconnected components: the representation of Tegal tourism destinations, the incorporation of Tegal dialect in game narratives and instructions, and the translation of local spatial knowledge into route-building and destination-exploration mechanics. This approach allows local knowledge to become an active component of player interaction rather than a passive visual attribute.

Based on this research gap, this study aims to develop and evaluate JAGATE as a local wisdom-based educational board game for strengthening tourism literacy among youth in Tegal Regency. The novelty of JAGATE lies not merely in using Tegal tourism as a game theme, but in embedding local geographical and linguistic knowledge directly into the gameplay mechanics. The “Muter Dalan”

mechanic transforms route manipulation into a spatial-learning activity, “Tile Paran” connects gameplay objectives with destination knowledge, while the use of Tegal dialect reinforces cultural-linguistic familiarity throughout player interaction. Thus, JAGATE proposes an integrated game-based tourism literacy model in which local tourism knowledge, spatial exploration, and linguistic identity operate as interconnected learning mechanisms.

METHODS

This study applies a Research and Development (R&D) method, adapting the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation) integrated with a Mixed Methods strategy (qualitative and quantitative). The ADDIE framework was selected because it provides a systematic, structured, iterative, and measurable approach to designing educational media (Dewi et al., 2026). Thus, this model is highly relevant for developing an interactive board game that represents local tourism and regional cultural identity.

The preliminary needs analysis involved 75 youth respondents in Tegal Regency. The respondents participated in the initial questionnaire designed to identify their existing knowledge of local tourism destinations and their preferences regarding interactive tourism information media. [INSERT: age range, sampling technique, inclusion criteria, and participant characteristics]. During the Implementation and Evaluation phases, participants were involved in JAGATE playtesting and subsequent evaluation. [INSERT: exact number of playtesting participants and clarify whether these participants were drawn from the same 75 respondents]. Providing this distinction is necessary to differentiate participants involved in the preliminary needs assessment from those involved in the evaluation of the developed product.

Data were collected through observation, interviews, questionnaires, and pre-test–post-test instruments corresponding to different stages of the ADDIE process. Observation and interviews were used during the Analysis phase to identify limitations in existing tourism promotional media and to map relevant local tourism and cultural

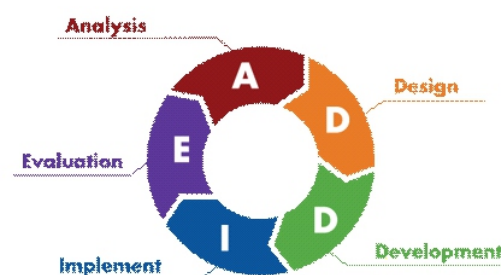


Figure 1. Adapted ADDIE Development Model Framework in Research.

content. The preliminary questionnaire examined respondents' familiarity with tourism destinations in Tegal Regency and their preferences for interactive educational media. During the Evaluation phase, pre-test and post-test instruments were used to measure changes in tourism literacy before and after playing JAGATE.

Tourism literacy was operationalized through indicators related to: (1) recognition of local tourism destinations, (2) understanding of destination characteristics, (3) spatial understanding of tourism locations and routes, and (4) recognition of local cultural and linguistic elements represented in the game.

During the Implementation phase, participants first completed a pre-test to establish their baseline tourism literacy. They subsequently participated in a JAGATE playtesting session in which they interacted with the modular tiles, destination cards, “Tile Paran,” and “Muter Dalan” mechanics. After completing the gameplay session, participants completed the same or equivalent tourism-literacy assessment as a post-test. Qualitative feedback concerning gameplay clarity, attractiveness, difficulty, cultural familiarity, and educational experience was also collected after playtesting.

Quantitative data were analyzed descriptively by comparing pre-test and post-test tourism-literacy scores. Changes in scores were examined to determine the percentage improvement following participation in the JAGATE gameplay session. Because the analysis was descriptive, the term “increase” is used to describe differences between pre-test and post-test scores rather than statistical significance. Qualitative responses from observations, interviews, and participant feedback were categorized according to

recurring themes related to usability, gameplay experience, cultural relevance, and tourism-information comprehension.

During the Analysis phase, an in-depth literature review regarding board games and geographical data of Tegal Regency was conducted alongside a comprehensive observation of existing tourism promotional media. This phase aimed to map 12 primary destinations (such as Guci and Semedo) while compiling a game narrative based on the Tegal dialect. Entering the Design phase, research focus shifted to visual asset design for 180 hexagonal tiles, destination cards, tourism maps, and constructing the operational blueprint for the "*Muter Dalan*" mechanics.

The Development phase focused on physical realization and production processes, including high-resolution full-color sticker printing and precise die-cut techniques. Using 3mm-thick premium acrylic for hexagonal tiles combined with custom wooden box containers ensured high durability for the final product. Meanwhile, the Implementation phase expanded product application from a limited scope to educational environments. Intensive playtesting sessions were conducted during this phase to evaluate game balancing and educational content legibility.

Finally, the Evaluation phase applied descriptive quantitative data analysis by comparing pre-test and post-test questionnaire instruments from respondents. This final step was crucial for reliably measuring tourism retention efficacy among players. Through this systematic sequence, the research produced an interactive, enjoyable educational board game while ensuring pedagogical validity, technical reliability, and legal compliance for the final design.

RESULTS AND DISCUSSION

Based on initial observations and interviews regarding the tourism sector in Tegal Regency conducted in January 2026, it was found that the region still lacked interactive promotional media capable of effectively engaging the youth. Tourism promotion heavily relied on e-books and promotional videos. Although these media presented visual data, their passive and static nature failed to foster long-term memory retention. Consequently, despite Tegal Regency boasting 74 potential tourist sites, initial survey

interviews revealed that around 70% of local youth recognized fewer than 10 destinations.

In subsequent data collection involving a questionnaire distributed to 75 youths, findings indicated a demand for interactive media capable of introducing local potential in an engaging and participatory manner. Respondents expressed an urgent need for interactive media to overcome the limitations of conventional formats, which are frequently abandoned due to easily forgotten messages. Board games offer advantages as interactive information delivery media because players are engaged in decision-making and problem-solving (Wirawan, 2023, p. 45). Player engagement during information absorption aids understanding and generates experiences that persist longer in memory. Implementing professionally designed educational board games is expected to enhance tourism spatial literacy, reinforce cultural identity, and foster a sense of belonging among the youth toward their hometown. Furthermore, integrating distinctive local elements—such as regional dialects and spatial maps—holds great potential for expanding cultural preservation efforts within an enjoyable learning environment.

The ADDIE development framework served as a systematic guide throughout the educational board game design process. This methodology encompassed field data collection, visual concept and mechanic development aligned with regional traits, physical product realization, and experimental testing in educational settings.



Figure 2: Initial Interviews and Survey on Tegal Youth Tourism Literacy]

Source: Authors' Documentation, 2026..

Apakah Anda setuju jika media permainan (board game) dijadikan salah satu instrumen resmi untuk mengenalkan kearifan lokal kepada wisatawan dan generasi muda?
75 jawaban

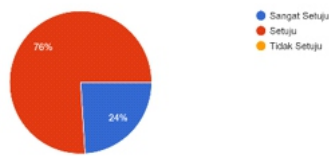


Figure 3: Survey Data Chart] Source: Authors' Documentation, 2026.

During the Analysis phase in January 2026, comprehensive brainstorming, literature review, and preliminary questionnaire analysis were conducted to address specific educational needs. Collected geographical and cultural data were critically analyzed to define core game content to support sustainable development across Tegal Regency's tourism potential (Dinas Kepemudaan, Olahraga dan Pariwisata [Disporapar] Kabupaten Tegal, 2025). This process successfully mapped 12 major tourism destinations in Tegal Regency (including prominent sites like Guci and Semedo) using the Disporapar Slawi tourism map while compiling an authentic Tegal dialect vocabulary inventory as the narrative foundation.

Furthermore, questionnaire results validated player preferences, showing a favorability for dynamic board systems over static layouts to avoid monotony. The Design phase in February 2026 translated these preferences into visual assets, focusing on 180 modular hexagonal tiles, tourism destination cards, tourism maps, and a self-operational blueprint for the tactical "*Muter Dalam*" mechanic.

The mechanics of this board game were designed using a combination of adaptive game mechanisms. The design intentionally avoids conventional game models like Snakes and Ladders or Monopoly, as both are overly mainstream and lack gameplay novelty. This aligns with Wirawan (2021), who states that educational board games require gameplay novelty to avoid monotony and constant replication of classical models. Integrating modern game mechanics is essential for driving players' analytical, tactical, and problem-solving skills.

Instead, this board game adapts card collection, route building, and fuel mechanics inspired by *Ticket to Ride*; tile-placement tactile movement mechanics from *Tsuro*; and path

building with player interaction mechanisms from *Saboteur*. Additionally, it incorporates customization elements and turn-based strategy from the console game *Front Mission 3*. Although dice rules are retained as a chance element, their usage is strictly combined with strategy considerations and player resource management. This combination creates an interactive, educational experience offering fresh tactical challenges.

The Development phase in March 2026 focused on physical production and material realization. This process yielded a high-tier prototype educational board game named JAGATE featuring a proportioned main arena. The name JAGATE stems from a local phrase meaning to explore while preserving Tegal's cultural heritage.



Figure 4: Destination Mapping based on Disporapar Slawi Tourism Map] Source: Authors' Documentation, 2026.



Figure 5: Visual Asset Design for Hexagonal Tiles and Game Cards]

Source: Authors' Documentation, 2026.



Figure 6: Board Game Mechanics Design] Source: Authors' Documentation, 2026.

The naming of the board game "Jagate" derives from the standard Indonesian word "Jagat", meaning world, universe, or territorial scope. This selection is rooted in the game's core mechanic centered around map-based gameplay. Philosophically and practically, map discussions are inseparable from representing a world (jagat) where navigation, exploration, and strategy occur. The addition of the suffix "-e" in "Jagate" reflects a linguistic trait of the Tegal dialect, which frequently appends "-e" to nouns as a definitive marker. According to Herawati et al. (2012) and Mulyani & Rahayu (2020), adding the suffix/enclitic -e to nouns in Tegal functions as a determinative marker (asserting specific 'its/the' meaning). Linguistically, the suffix -e exhibits high frequency in daily Tegal speech, making its inclusion in "Jagate" (*Jagate*) an instant reinforcement of Tegal's cultural identity while emphasizing the meaning "The World". Thus, "Jagate" reflects map exploration in gameplay while strengthening local cultural identity.

The visual identity of the Jagate logo was geometrically designed by combining a hexagonal grid base with an initial letter "J". This logogram design embodies multiple philosophical and visual layers:

1. Hexagonal Shape (Paving Block & Road Representation):

The primary hexagonal shape is inspired by paving block patterns, which contextually form roads, sidewalks, and accessibility infrastructure. Maps and roads are inseparable elements; roads symbolize movement, exploration, and inter-regional connectivity—the essence of map gameplay in Jagate. Semiotically, adapting paving block structures into the logo acts as a signifier for roads and movement. According to geosemiotics theory (Scollon & Scollon, 2003), physical materials in built environments possess indexicality. Paving blocks are visually and conventionally agreed upon in public spaces as hardscape elements signaling roads, pedestrian paths, or spatial accessibility. Kevin Lynch's (1960) image of the city theory also categorizes ground paving patterns under the path element. Therefore, fusing hexagonal paving patterns into the logo visually represents road textures while symbolizing exploration, mapping, and navigation.

2. Initial Letter "J" Integration:

Inside the hexagonal module, the letter "J" is integrated as an abbreviation for "Jagate". Fusing "J" using positive/negative space within the hexagon creates a solid, modern, and memorable form.

3. 360-Degree Rotation Flexibility (Modular Tile Dynamics):

The hexagon shape was chosen for its geometric symmetry, allowing 360 rotation without losing structural precision. This element technically and philosophically represents the board game's mechanics, where board tiles can be rotated, placed, and connected from multiple directions by players from all sides of the table.

Physical production utilized high-resolution full-color sticker printing paired with precise die-cut techniques to ensure visual quality. To guarantee durability, 3mm-thick premium acrylic was selected for modular hexagonal tiles, housed within a custom wooden box. The tile size measures 2.5 cm. Anthropometric hand studies indicate that fingertip pinch actions require a minimum contact area of 2.5 cm to 3 cm to manipulate components without fine-motor fatigue (Pheasant, 2003).

The physical board is designed with dimensions of 40 cm x 40 cm. This selection is based on reach-zone ergonomics and tabletop footprint efficiency. According to Pheasant & Haslegrave (2018), normal reach zones on horizontal surfaces span a 35 cm to 45 cm radius, allowing players to reach the board center comfortably while seated. Furthermore, these dimensions align with Eurogame design theory (Woods, 2012), where medium-sized boards (40x40 cm) offer an optimal balance between spatial information legibility and personal player zones around the perimeter. With a surface area of 1,600 cm², this board proportionally accommodates 2.5 cm x 2.5 cm tile modules in a grid format rich with exploratory strategic options.

The Implementation phase took place in April 2026, expanding game application from restricted test groups to broader educational environments. Intensive playtesting evaluated game balancing and educational legibility. The game utilizes a Modular Tile-Laying System comprising 180 hexagonal tile components (road,

free pass, obstacle, and fuel tiles) alongside 12 destination cards.



Figure 7: JAGATE Board Game Logo] Source: Authors' Documentation, 2026.



Figure 8: Physical Prototype Photo of the Developed JAGATE Board Game] Source: Authors' Documentation, 2026.

Exploration relies on Action Point (AP) allocation management to govern turn movements. Strategic depth is realized through "Muter Dalan", a tactical rule permitting players to rotate hexagonal path connectivity to open access toward destination sites or block opponents. Integrating spatial data from Disporapar Tegal Regency ensures each "Tile Paran" visualization accurately represents actual regional landscapes.

Target audience feedback collected during playtesting showed enthusiastic reception. Respondents stated that presenting 12 destinations alongside humorous Tegal dialect on game cards made learning natural and entertaining. Players considered JAGATE challenging, recognizable, and effective in introducing local attractions previously unknown to them.

The final Evaluation phase in May 2026 analyzed JAGATE's efficacy in enhancing tourism literacy. Descriptive quantitative data analysis measured impact by comparing pre-test and post-

test questionnaire results. Statistical findings from playtesting proved "JAGATE" effectively addresses low regional tourism literacy.

The observed improvement can be interpreted in relation to the way tourism information is embedded into the game mechanics rather than presented as separate instructional content. The Modular Tile-Laying System requires players to construct and modify spatial relationships while attempting to reach particular destinations. Consequently, players do not merely read destination names but repeatedly locate, connect, and strategically interact with tourism-related information. The "Muter Dalan" mechanic is particularly important in this process because route manipulation transforms spatial information into a problem-solving task. In this sense, the gameplay mechanic functions simultaneously as an entertainment mechanism and a spatial-learning mechanism.

These findings are consistent with previous studies demonstrating the educational potential of board games for introducing historical and cultural knowledge. Wibowo and Agustin (2022), for example, employed board games to facilitate engagement with historical buildings, while Putri and Agustin (2022) used board-game design to introduce the heritage environment of Jakarta's Old Town. JAGATE extends this approach by integrating tourism literacy with dynamic spatial manipulation rather than relying primarily on movement across a predetermined board. The modular route system therefore shifts the player from following an existing spatial structure to actively constructing and reconstructing pathways toward tourism destinations.

The integration of Tegalán linguistic elements further differentiates JAGATE from tourism information media that rely solely on geographical representation. The use of the Tegalán dialect, the locally derived name "JAGATE," and destination-specific content establishes cultural familiarity within gameplay. Local wisdom therefore operates at two levels: as knowledge represented by the game and as a communicative code through which players encounter that knowledge. This indicates that cultural localization in educational game design can move beyond visual ornamentation and become embedded within the information architecture

and interaction system of the game itself.

From a visual communication design perspective, the principal contribution of JAGATE lies in demonstrating how local knowledge can be translated into an interactive system rather than merely represented through visual imagery. The relationship can be summarized as follows: local tourism knowledge provides the informational content; Tegalán linguistic identity provides cultural contextualization; and modular spatial gameplay provides the interaction mechanism. Their integration produces a game-based tourism literacy experience in which learning occurs through exploration, route construction, decision-making, and repeated encounters with local destination information.



Figure 9: Playtesting Session Photo with Student Respondents] Source: Authors' Documentation, 2026.

Questionnaire data indicated player post-test tourism comprehension scores improved significantly, achieving a minimum average increase of 30% over pre-test scores. This competitive exploration simulation successfully transformed passive textual understanding into spatial-geographical comprehension held in long-term memory. Overall, these findings reinforce the

thesis that combining visual communication design aesthetics with balanced strategy mechanics produces an effective instrument for local cultural preservation among youth. JAGATE proved functional, pedagogically valid, and technically reliable as a modern promotional and educational medium.

CONCLUSION

This study developed JAGATE as a local wisdom-based educational board game that integrates tourism information, Tegal linguistic identity, and modular spatial gameplay to support tourism literacy among youth in Tegal Regency. Through the ADDIE development process, local tourism knowledge was translated into 12 destination representations, a Modular Tile-Laying System, the “Muter Dalam” route-manipulation mechanic, and the “Tile Paran” destination system. Evaluation through pre-test and post-test comparison indicated an increase in participants' tourism-literacy scores following gameplay, with the recorded improvement reaching at least 30% [replace with exact value based on the final dataset]. These findings indicate that embedding tourism information directly into spatial exploration and strategic interaction can provide a more participatory approach to communicating local tourism knowledge than passive information delivery alone.

The principal contribution of JAGATE lies not merely in introducing Tegal tourism through a board game, but in demonstrating how local geographical knowledge, linguistic identity, and gameplay mechanics can operate as an integrated educational communication system. Nevertheless, the findings should be interpreted within the scope of the current evaluation. The study represents only 12 destinations from the broader tourism potential of Tegal Regency, and the evaluation did not measure long-term retention or compare JAGATE with alternative tourism-learning media. Future studies should therefore involve broader participant groups, delayed post-tests, comparative or experimental designs, and additional tourism destinations to determine the durability and generalizability of the observed learning outcomes.

REFERENCES

- Bashori, M. (2023). MONOGAYENG (Permainan Monopoli Berwawasan Cagar Budaya Jawa Tengah): Inovasi Media Pembelajaran Berbasis Kearifan Lokal Bagi Siswa Sekolah Menengah Kejuruan. *Historia Pedagogia: Jurnal Penelitian dan Inovasi Pendidikan Sejarah*, 12(2), 78–98. <https://doi.org/10.15294/hisped.v12i2.77164>
- Dewi, A. C., Salsabiila, F., Arifin, R. A., Aqshal, R. N., & Kusumaningrum, H. (2026). Model pengembangan media pembelajaran berbasis teknologi: Analisis ADDIE, 4D, dan ASSURE. *Jurnal Pendidikan dan Keguruan*, 4(3), 249–261. <https://jutepe-joln.net/index.php/JURPERU>
- Dinas Kepemudaan, Olahraga dan Pariwisata Kabupaten Tegal. (2025). Travel guide to Slawi: E-book pariwisata Kab. Tegal 2025. Disporapar Kabupaten Tegal. <http://keposate.tegalkab.go.id>
- Harahap, M. A., Anggraini, F. P., DV, C., Safitri, S., & Oktapiani, R. (2025). Pembelajaran Sejarah di Era Digital: Strategi Pengembangan Bahan Ajar Efektif Bagi Generasi Z. *Sosial: Jurnal Ilmiah Pendidikan IPS*, 3(4), 64–78. <https://doi.org/10.62383/sosial.v3i4.1343>
- Herawati, D., Hermintoyo, M., & Amin, M. F. (2012). Afiks pembentuk verba dan nomina Bahasa Jawa dialek Tegal: Kajian deskriptif struktural. *Jurnal Ilmu Budaya*, 1(1), 1–7.
- Hidayattullah, M. F., Af'idah, D. I., & Handayani, S. F. (2024). Pengembangan Aplikasi Pemandu Wisata Guci Berbasis Mobile Melalui Prinsip User-Centered Design (UCD). *Jurnal Informatika Teknologi dan Sains (Jinteks)*, 5(4), 738–744. <https://doi.org/10.51401/jinteks.v5i4.3694>
- Lynch, K. (1960). *The image of the city*. MIT Press.
- Mulyani, S., & Rahayu, P. (2020). Proses morfologis pemarkah definitif pada Bahasa Jawa Pesisir Barat. *Jurnal Bahasa dan Sastra Jawa*, 8(2), 45–53.
- Pheasant, S. (2003). *Body space: Anthropometry, ergonomics and the design of work* (2nd ed.). CRC Press.
- Pheasant, S., & Haslegrave, C. M. (2018). *Body space: Anthropometry, ergonomics and the design of work* (3rd ed.). CRC Press.
- Putri, S. U., & Agustin, S. A. (2022). Perancangan board game Jelajah Kota Tua Jakarta untuk remaja sekolah menengah atas. *Jurnal Sains dan Seni ITS*, 11(4), F1111–F1117. <https://doi.org/10.12962/j23373520.v11i4.73117>
- Scollon, R., & Scollon, S. W. (2003). *Discourses in place: Language in the material world*. Routledge.
- Wibowo, I. C. A., & Agustin, S. A. (2022). Perancangan Board game dengan Tema Jelajah Bangunan

- Bersejarah di Kota Malang. Jurnal Sains dan Seni ITS, 11 (4) , C 1 7 6 – C 1 8 2 . <https://doi.org/10.12962/j23373520.v11i4.89675>
- Wirawan, A. R. (2021). Penerapan Game Dynamics Modern pada Board Game Edukasi. Jurnal Teknologi Pendidikan & Permainan.
- Wirawan, A. R. (2023). Yuk bikin board game edukasi. Mekanima Inspira Nagara.
- Woods, S. (2012). Eurogames: The design, culture and play of modern board games. McFarland & Company.
- Zefanya, C. G. (2025). Permainan Papan Sebagai Media Peningkatan Kesadaran Generasi Z Terhadap Pelestarian Artefak Majapahit. VisART: Jurnal Seni Rupa dan Desain, 3(2), 639–648. <https://doi.org/10.61930/visart.v3i2.1415>