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CONSTRUCTIVIST ANALYSIS OF STUDENTS' MULTIMODAL TEXTS INTEGRATING LOCAL WISDOM IN THE DIGITAL LITERACY ERA

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Abstract

This study aims to analyze university students' multimodal texts that integrate local wisdom values through the lens of Jean Piaget's constructivist perspective. The study connects constructivist theory with digital literacy practices rooted in local culture, an area that remains underexplored in Indonesian language education. The research employs a descriptive qualitative approach, focusing on the process of students' knowledge construction in producing multimodal texts based on local wisdom. The participants were third-semester students of the Indonesian Language, Literature, and Regional Education Program, Faculty of Teacher Training and Education, Mathla'ul Anwar University, Banten. The primary data consisted of multimodal text products themed around the local wisdom of Pandeglang, while supporting data were obtained through direct classroom observations and semi-structured interviews. The research instruments included observation sheets, interview guides, and students' reflection journals. The data analysis process was guided by Piaget's constructivist framework, which examined the processes of assimilation, accommodation, and equilibration in students' cognitive development. Data were analyzed through three stages: data reduction, data display, and conclusion drawing, with triangulation employed to ensure data credibility. The findings reveal that students actively assimilated local wisdom knowledge with academic theory, adjusted their ways of thinking and presenting cultural values in multimodal texts, and achieved a balance between cultural preservation and the demands of digital literacy. The process of creating multimodal texts also demonstrated experiential learning (learning by doing) and self-reflection, while variations in visual and narrative styles reflected each student's individual knowledge construction.

Keywords: *constructivism; digital literacy; local wisdom; Indonesian language learning; multimodal texts.*

1. Introduction

The development of information and communication technology has transformed the way university students learn and express their knowledge. In the digital literacy era, students no longer produce linear written texts but are capable of creating multimodal

products that combine text, images, audio, video, and interactive elements. These products serve not only as indicators of digital literacy skills but also as means for students to communicate ideas, values, and thoughts creatively. This phenomenon requires students to master not only conventional reading and writing skills but also the ability to comprehend and produce texts that integrate multiple modes of communication. This aligns with the development of information and communication technology that shapes how students access and convey information.

Multimodality has become a widely discussed concept among linguists, semioticians, educators, and technologists in recent years. This growing attention is due to the increasing recognition that meaning-making does not rely solely on linguistic aspects but involves multiple semiotic resources. Unfortunately, the concept of multimodal-based learning has not been widely implemented in Indonesian educational practice, even though multimodality represents an essential learning concept for developing 21st-century skills (Abidin, 2022). Integrating multimodal approaches into language education can help students better connect cognitive, affective, and cultural dimensions of learning, which are crucial in preparing them to become active and reflective learners.

Although technology provides various tools, many students still face challenges in producing high-quality multimodal texts. Several studies indicate that students often struggle to integrate multimodal elements effectively, structure coherent texts, and convey ideas and values deeply. At times, students become confused about which information should be presented through written text and which would be more effectively communicated through visuals, graphics, or tables. As a result, their work often becomes too lengthy or less informative. In addition, students tend to find it difficult to connect different components, for instance, combining rigid academic text with concise and communicative visuals. This indicates that, although students are familiar with digital devices, their ability to construct knowledge actively and meaningfully through writing still requires deeper examination. This aligns with Al Fajri (2018), who explains that students often use technology for entertainment rather than educational purposes. Consequently, when they are asked to engage with academic texts, they struggle to interpret and internalize the meanings conveyed in the readings. This gap demonstrates the importance of guiding students to utilize digital technology for constructive, creative, and reflective learning.

From a language learning perspective, writing ability is a core skill that involves not only linguistic proficiency but also critical, creative, and reflective thinking. Writing is also the most complex of all language skills. According to Tarigan (2008), writing is an activity of expressing ideas, thoughts, or feelings in the form of written symbols that can be read and understood by others. Similarly, Dalman (2014) defines writing as a process of revealing thoughts, ideas, and emotions through written symbols as a form of indirect communication. Therefore, students are required to develop their knowledge actively so that they can express their ideas meaningfully. Writing, in this sense, becomes both a cognitive and social act that reflects how students internalize and reconstruct knowledge through interaction and reflection.

According to Piaget's constructivist theory, learning is an active process of knowledge construction by individuals through interaction with their environment and information sources. This aligns with Trianto (2010), who asserts that knowledge is not a set of ready-made facts, concepts, or rules to be memorized but must be constructed and interpreted through real experiences. Teaching based on constructivism assumes that students actively

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participate in creating meaning and knowledge. Simply put, constructivist instruction allows students to learn freely while developing motivation and critical thinking. Constructivism has a significant influence on education. Teaching is no longer viewed as the transmission of fixed knowledge but as an active process in which students build their own understanding, skills, and attitudes. Students search for meaning from what they learn by comparing prior knowledge with new experiences and contexts (Nerita et al., 2023). Furthermore, constructivist learning shifts classroom orientation from teacher-centered to student-centered. Students are no longer regarded as empty vessels to be filled with information but as active participants responsible for their own learning. In this framework, the teacher's role evolves into that of a facilitator who provides opportunities for exploration, encourages reflection, and supports students in achieving cognitive equilibrium through continuous interaction and adaptation.

In the context of multimodal text production, students do not merely copy information but process, interpret, and express it according to their experiences and perspectives. These multimodal products can serve as reflections of students' knowledge construction processes and indicate the extent to which they can internalize concepts and express understanding creatively. Furthermore, digital literacy has become an inseparable part of modern education. Scholars emphasize that digital literacy encompasses not only technical skills but also the ability to understand, evaluate, and communicate information meaningfully through various digital media. In Indonesian language learning practice, students' ability to produce multimodal texts serves as an indicator of both digital literacy and academic creativity. By analyzing students' multimodal products, educators can gain insights into students' actual learning processes how they construct knowledge, articulate ideas, and develop humanistic and creative potential.

Within the digital literacy framework, students are required not only to understand texts deeply but also to integrate various multimodal elements to express ideas and information effectively. One significant element that can be integrated into multimodal texts is local wisdom. Incorporating local wisdom into digital-based texts is particularly valuable because it connects traditional cultural knowledge with modern technological expression. This process helps students to not only preserve cultural heritage but also reinterpret it within the context of contemporary communication and digital creativity. To integrate local wisdom into multimodal texts, students need critical thinking, creativity, and the ability to reflect on their experiences and prior knowledge. Therefore, it is important to analyze how students' multimodal text products reflect their knowledge construction processes based on the constructivist perspective in conveying ideas about local wisdom.

So far, studies examining university students' multimodal text products as reflections of their knowledge construction remain limited particularly those that integrate local wisdom and link constructivist theory with digital literacy. Hence, this study is significant as it provides a holistic understanding of the quality of students' multimodal products, the integration of multimodal elements, language use, depth of ideas and values, and the knowledge construction process that occurs during learning. By situating this research within Piaget's constructivist framework, the study not only contributes to the theoretical development of multimodal learning in the Indonesian context but also offers practical insights into designing innovative, culturally grounded, and digitally adaptive learning models. The findings are expected to serve as a foundation for developing Indonesian

language learning strategies that are more creative, innovative, and responsive to the demands of digital literacy.

2. Literature Review

2.1 Piaget's Constructivist Theory

In the learning process, teachers must understand both students' learning strategies and their learning styles. As Dahar (2011) states, learning according to Piaget occurs through the processes of assimilation and accommodation, which continue until cognitive equilibrium is achieved. Similarly, Suparno (1997) explains that Piaget's constructivist learning framework consists of three main stages assimilation, accommodation, and equilibration, assimilation, accommodation, and equilibration. Assimilation refers to the process in which learners integrate new experiences into existing cognitive structures or schemas, while accommodation involves modifying these existing schemas to fit new experiences that do not align with prior knowledge. Equilibration, in turn, represents the balancing process between assimilation and accommodation, leading to cognitive growth.

Therefore, in order to foster meaningful learning (*meaningful learning*), teachers need to adopt appropriate instructional strategies that align with students' cognitive stages and characteristics (Dahar, 2011). In the context of multimodal-based learning, the principles of assimilation, accommodation, and equilibration can be observed in how university students engage with digital and cultural elements. For instance, assimilation occurs when students integrate familiar cultural symbols into their digital presentations; accommodation arises when they adapt traditional expressions to modern digital forms; and equilibration emerges when they achieve harmony between local cultural values and contemporary modes of expression.

This demonstrates that Piaget's theory not only explains individual cognitive processes but also offers a useful framework for understanding how learners construct knowledge and meaning through creative and reflective multimodal learning activities. Hence, in this study, Piaget's constructivism provides the theoretical foundation to analyze how students actively construct meaning and knowledge in producing multimodal texts that embody local wisdom values.

2.2 Multimodal Texts

Multimodal texts are forms of communication that combine written or spoken language with visual or animated elements. These texts go beyond verbal language alone, integrating linguistic, visual, auditory, and spatial resources into a unified message. Kayati (2022), defines multimodal texts as those that combine language with other semiotic modes such as visual, sound, and oral features—presented simultaneously. Similarly, Chen (2010) conceptualizes *multimodality* as a methodological approach to understanding verbal language through the integration of different dialogic and representational levels.

Readers, therefore, do not construct meaning from words alone but also from the interaction among various semiotic elements that support the message. These include verbal (spoken or written language), visual (images, colors, typography), gestural (body movements, facial expressions), audio (intonation, music, sound effects), and spatial (layout, positioning of text and images).

In the context of higher education, multimodal literacy requires students to manage multiple modes of communication textual, visual, auditory, and gestural coherently and

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critically. Kress & van Leeuwen, (2021) explain that each mode of communication possesses its own visual grammar that must be understood to ensure that messages convey complete meaning. This aligns with the findings of Lim & Tan (2018), who note that university students often struggle to integrate visual and verbal elements harmoniously when producing digital-based assignments. These challenges indicate that multimodal literacy is not merely a technical ability to use different media but also a conceptual skill to coordinate various semiotic resources in order to construct cohesive meaning.

Furthermore, digital-based learning that integrates experimentation with multiple modes of communication has been shown to enhance students' multimodal literacy competence. In such pedagogical settings, students are encouraged to experiment with diverse forms of representation such as infographics, reflective videos, and digital narratives. As a result, they demonstrate improvements in critical, collaborative, and reflective thinking skills, as they learn to construct meaning according to their cultural and personal contexts. These findings resonate with the insights of (Jewitt et al., 2016), who argue that multimodality enables learners to construct meaning through the interplay of language, image, and social experience.

2.3 Local Wisdom

According to the *Kamus Besar Bahasa Indonesia* (Offline Version), local wisdom refers to knowledge and intelligence rooted in local traditions and practices. Wibowo (2015) defines local wisdom as the cultural identity of a nation that enables it to absorb and transform external cultural influences into its own distinct character and capability. More broadly, local wisdom forms an inseparable part of language, tradition, and belief systems that are passed down across generations. It should therefore be preserved and revitalized as a key element of Indonesia's multicultural heritage.

In educational settings, local wisdom functions not merely as cultural content but also as a medium of value-based learning. It fosters moral reasoning, empathy, and social harmony. By integrating local values such as mutual cooperation, respect, and community harmony into learning activities, educators help students internalize ethical and cultural sensibilities. In multimodal learning contexts, these values can be represented through visual symbols, narratives, or digital storytelling that embody local traditions.

Mutmainah (2023) discovered that integrating local wisdom values into digital learning strengthens students' cultural identity and reflective thinking. This finding supports the argument that local wisdom provides a meaningful context for developing digital literacy while grounding it in cultural awareness. Local traditions, when reinterpreted through digital and multimodal media, become sources of both creative expression and ethical reflection.

In relation to the present study, the incorporation of local wisdom into multimodal text creation enables students to engage in cognitive processes that mirror Piaget's stages of assimilation and accommodation absorbing cultural elements and transforming them into new digital representations. Through this process, students not only construct knowledge but also negotiate their cultural identity in a digital space. Thus, local wisdom serves as both the content and the epistemological foundation for developing culturally grounded digital literacy.

3. Research Method

The research method refers to a systematic and deliberate way of solving research problems to obtain facts and conclusions that can be used to understand, explain, predict, and control a phenomenon. This study employed a qualitative approach with a descriptive method (Syamsuddin & Vismaia, 2006). This approach was chosen because the research focuses on understanding meaning and the process of knowledge construction experienced by the participants within specific social and cultural contexts. According to Creswell (2016), qualitative research seeks to understand phenomena in depth rather than merely measuring numbers or frequencies.

More specifically, this study focuses on the learning process of university students in producing multimodal texts that incorporate elements of local wisdom. The descriptive method was used to provide a comprehensive overview of the characteristics of students' multimodal text products and to analyze them using Piaget's constructivist framework. The participants of this study were third-semester students of the Indonesian Language, Literature, and Regional Education Program at the Faculty of Teacher Training and Education, Mathla'ul Anwar University, Banten. The primary data consisted of digital multimodal text products containing representations of local wisdom. Supporting data were obtained through semi-structured interviews and direct observation during the learning process. This aligns with Moleong (2017) view that data sources in qualitative research may include words, actions, and documents.

The instruments used for data collection included observation sheets, interview guides, and students' reflective journals. Observations were used to record learning activities and interactions during the creation of multimodal texts, while interviews explored students' understanding of local wisdom values and their experiences integrating these values into digital formats. The collected data were analyzed using Piaget's constructivist theoretical framework, which involves the processes of assimilation, accommodation, and equilibration to understand how students construct knowledge through the experience of creating multimodal texts. The analysis followed the stages of data reduction, data display, and conclusion drawing. To ensure data credibility, triangulation was conducted across multiple data sources.

Thus, this methodological design provides a comprehensive understanding of how students construct knowledge through digital literacy practices grounded in multimodality and local wisdom.

4. Results and Discussion

According to Jean Piaget, knowledge is actively constructed by individuals through the processes of assimilation (connecting new knowledge with existing cognitive structures) and accommodation (adjusting cognitive structures to understand new information). In the context of student learners, students do not merely receive information; they construct meaning based on experience, observation, and reflection. Products such as multimodal texts (digital presentations, videos, infographics, etc.) serve as tangible evidence of constructive thinking, as students select, interpret, and reorganize knowledge into multimodal forms.

Below, the researcher presents an example of a student's multimodal text along with an explanation.

Data M1

1. General Description of the Multimodal Text Product

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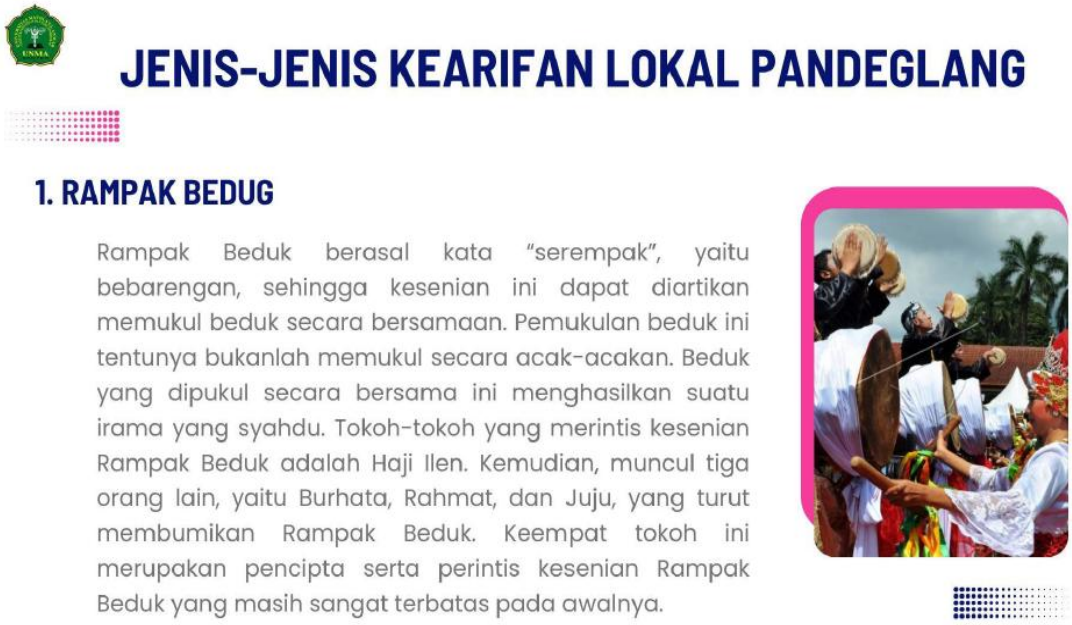
The multimodal text analyzed is a digital presentation themed on Local Wisdom of Pandeglang. The presentation consists of 21 slides combining verbal elements (written text) and nonverbal elements (color schemes, typography, digital layout, and illustrations of local culture). The main objective of the work is to introduce various forms of local wisdom, such as rampak bedug, debus, kue jojorong, ruwat laut, and kue balok menes, while also highlighting the challenges and strategies for preserving cultural values amid the forces of modernization.

Figure 1

Multimodal Texts on the Local Wisdom of Pandeglang



The text is structured systematically in the following order: (a) definitions of local wisdom according to experts, (b) types of local wisdom in Pandeglang, (c) explanations of each tradition, (d) challenges in preserving traditions in the era of globalization, and (e) strategies for teaching the values of local wisdom to students. This arrangement demonstrates the students' awareness of scientific thinking structures within the context of Indonesian language learning, as well as their ability to organize information digitally and multimodally.

2. Analysis Based on Piaget's Constructivism

Piaget's constructivism emphasizes that knowledge is not passively transferred from teacher to student, but is actively constructed by individuals through the processes of assimilation, accommodation, and equilibration. This knowledge construction process can be observed in the stages students undergo while developing their multimodal texts.

a) Assimilation (Integrating Prior Knowledge with New Knowledge)

Assimilation occurs when students connect their prior knowledge of local culture with the academic concepts learned in the Indonesian language course. In this product, students present several definitions of local wisdom from experts such as Koentjaraningrat, Geertz, and Syarifuddin, and then relate them to concrete cultural practices in Pandeglang, as shown in slides 2–3: "Koentjaraningrat describes local wisdom as the wisdom that grows

and develops within a community and serves as a guideline for communal life… Geertz refers to it as local knowledge, or the way a community understands its environment."

The inclusion of these definitions indicates that students have engaged in conceptual assimilation, linking scientific concepts learned in class with cultural phenomena familiar to them since childhood. They do not merely memorize theories but actively use them to explain local contexts.

b) Accommodation (Adjusting Knowledge Structures)

Accommodation occurs when students adapt their traditional ways of thinking to meet the demands of digital literacy and new methods of presenting information. The text is not arranged in a conventional essay format but as a multimodal digital presentation, which requires technological, aesthetic, and semiotic skills. Students use slide formats with concise bullet points, contrasting background colors, and visual terms such as *"Rampak Bedug," "Ruwat Laut,"* and *"Balok Menes"*, accompanied by brief descriptions of their symbolic meanings.

The choice to present local culture through digital media demonstrates cognitive accommodation, in which students adjust both their knowledge and modes of presentation to remain relevant in a modern context. Students shift from merely "telling about culture" to visualizing culture, in line with the characteristics of multimodal literacy in the digital era. This is illustrated in slides 5 to 8.

c) Equilibration (Cognitive Balance)

According to Piaget, cognitive equilibration is the result of the interaction between assimilation and accommodation. In this context, students achieve equilibrium when they realize that traditional values do not need to be abandoned in the digital era but can instead be conveyed through technology. This is demonstrated in slides 9 to 11, where: In the Challenges of Local Wisdom section, students write: "The rapid flow of modernization causes the younger generation to perceive local culture as outdated. A lack of education results in the erosion of noble values." In the Learning Strategies section, students propose solutions such as: "A contextual learning approach that connects the material to real-life experiences and involves the local community."

This demonstrates students' ability to achieve equilibrium between traditional and modern thinking, reflecting their capacity for reflective thinking and finding a balance between cultural preservation and digital-based learning innovation.

d) Meaningful and Reflective Learning Activities

Piaget emphasizes that effective learning occurs through direct activities and self-reflection (learning by doing). The process of creating multimodal texts requires students to:

1) Collect data from various sources (literature, the internet, local experiences);
2) Filter and select relevant information:
3) Design a communicative digital layout;
4) Organize narratives using standardized and systematic language.

In slides 13–17, students describe the participation of indigenous communities in cultural preservation, as well as ways teachers can incorporate these values into learning. This demonstrates social reflection: students understand that cultural preservation is not solely the responsibility of the government but also of society and the educational sector.

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These activities show that students are not passive recipients of information but actively construct meaning through exploration, experience, and personal reflection. This is the essence of Piaget's constructivism, which positions students as active learning subjects.

e) Individual Knowledge Construction and Creativity

According to Piaget, each individual has a unique way of constructing cognitive schemas. In this multimodal product, M1 displays personal characteristics through: Consistent color choices and layout designs, use of formal yet communicative diction, selection of cultural themes drawn from their local environment (Pandeglang). These features indicate students' agency, i.e., their ability to determine independently the form and direction of meaning-making. The product is not only informative but also reflects cultural identity and personal interpretation of local values.

Data M2

1. General Description of the Multimodal Text Product

The multimodal text produced by M2 is a digital presentation featuring the theme of Local Wisdom in Pandeglang, Banten. The work consists of 15 slides, containing text, illustrative images, and simple yet communicative color and typography elements. The presentation structure is informative, progressing from theoretical concepts to practical applications in the context of learning. The content is organized as follows:

a. Definitions of local wisdom according to experts.
b. Types of local wisdom in Pandeglang (*debus, rampak bedug, dogdog lojor, seren taun, babacakan*).
c. Social and spiritual values contained in these traditions.
d. Challenges in preserving culture in the modern era.
e. Strategies for teaching Indonesian language based on local wisdom.

This structure demonstrates students' systematic understanding of scientific text organization, as well as their ability to present information visually and multimodally. The product is educational and reflective, aligning with the objectives of Indonesian language learning, which emphasize cultural appreciation and digital literacy skills.

2. Analysis Based on Piaget's Constructivism

a) Assimilation (Integrating Prior Knowledge with New Knowledge)

Within Piaget's framework, assimilation is the process of integrating existing experiences and knowledge with newly acquired information. The student connects personal experiences and local cultural knowledge familiar since childhood with academic theories learned in class. For instance, the student writes definitions of local wisdom according to Koentjaraningrat and Geertz and adds concrete examples from Pandeglang culture, such as *debus* and *rampak bedug*.

This demonstrates the student's ability to link theoretical concepts with local cultural realities. The student does not merely copy theories but assimilates scientific concepts into the framework of personal cultural experience. This process reflects active cognitive development, in line with Piaget's principle that knowledge is constructed through the connection of prior and new experiences.

b) Accommodation (Adjusting Knowledge Structures)

Accommodation occurs when students adjust their thinking and understanding to incorporate new information. M2 demonstrates accommodation by presenting traditional culture using a digital and academic approach. In slides 5–7, M2 explains that the art of *debus* is not merely entertainment but also embodies spiritual meaning and mental resilience values. The student also notes that this tradition is now integrated into character education in schools.

This indicates that the student has transformed traditional cognitive schemas into new, more contextual and academic understandings. Additionally, the choice of a multimodal digital presentation demonstrates accommodation to the demands of digital literacy in the modern era, as students learn to adapt their methods of knowledge dissemination to media relevant to their generation.

c) Equilibration (Cognitive Balance)

Piaget explains that ideal learning occurs when individuals achieve equilibrium between assimilation and accommodation. M2 reaches this balance when they are able to integrate traditional values with the demands of the digital era without discarding either. In slide 8, M2 writes "The flow of globalization has caused the younger generation to begin forgetting local culture. Therefore, it is important for education to introduce local wisdom so that its values are not lost."

This statement reflects the student's reflective and balanced thinking, demonstrating awareness of modernization challenges while recognizing the importance of adapting to ensure cultural continuity. Thus, M2 achieves cognitive balance between preserving tradition and adopting technological advancements as a means of cultural preservation.

d) Meaningful and Reflective Learning Activities

Piaget emphasizes that meaningful learning occurs through active engagement, exploration, and personal reflection. M2 clearly demonstrates this in their multimodal text product. The student not only gathers information but also processes, interprets, and reorganizes it into a communicative visual form. In slide 10, the student closes the presentation with a reflective message: "Preserving local culture is a shared responsibility of the younger generation."

The text creation process involves direct learning activities, including data collection, design planning, narrative construction, and visual editing. This exemplifies the principle of learning by doing, showing that students learn not merely by listening, but by creating and constructing meaning.

e) Individual Knowledge Construction and Creativity

From Piaget's perspective, each learner constructs knowledge uniquely based on their experiences and social environment. M2 demonstrates independent thinking (agency) by selecting Pandeglang cultural topics and interpreting them personally. Evidence includes the use of soft colors, organized layouts, and formal yet communicative language. The selection of traditions such as *jojorong* and *rampak bedug* reflects the student's emotional connection to local culture.

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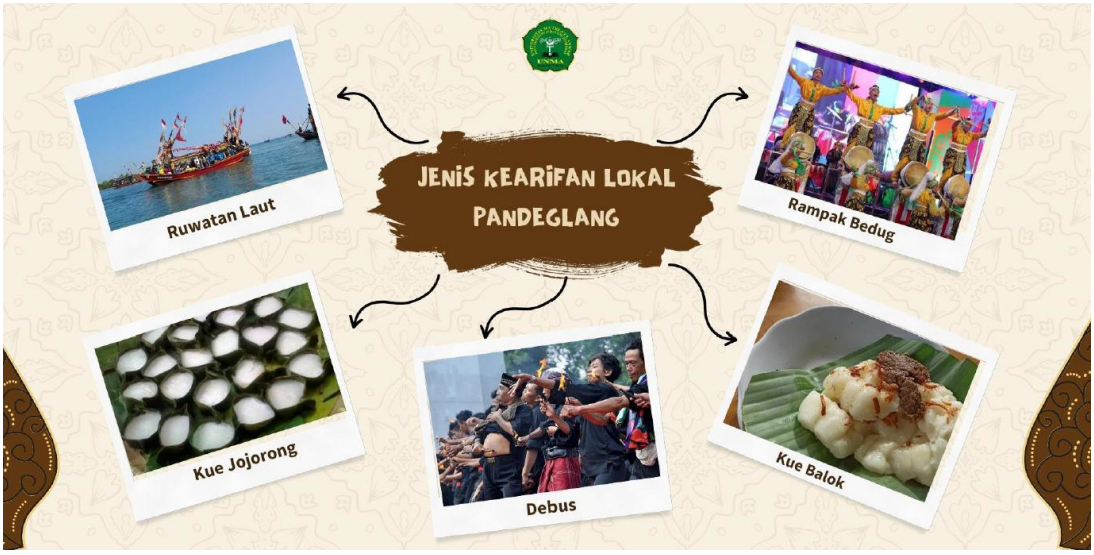
This shows that the student constructs cultural meaning independently, rather than merely copying information from external sources. This characteristic aligns with Piaget's view that learners are active constructors of knowledge, not passive recipients.

Figure 2

Multimodal Texts on the Types of Local Wisdom in Pandeglang



Data M3

1. General Description of the Multimodal Text Product

The multimodal text produced by M3 is a digital presentation (PowerPoint slides) with the theme "Local Wisdom of Pandeglang." The work is structured in an informative and descriptive format, containing text, key points, and several simple visual elements such as color, layout, and inspirational quotes in the closing section. The presentation content includes:

a. Definitions of local wisdom according to experts (Keraf, Sibarani).
b. Types of local wisdom in Pandeglang (*pencak silat, seren taun, ngukus, anyaman, debus*).
c. History and cultural meaning of each tradition.
d. Ways to preserve local wisdom.
e. Challenges in the modern era.
f. Indonesian language teaching strategies based on local wisdom.

This structure demonstrates that the student understands the flow of scientific and educational thinking, progressing from theoretical concepts to practical applications. The presentation also shows awareness of linking local cultural values with modern teaching strategies, aligning with digital literacy goals and contextual learning in Indonesian language education.

2. Analysis Based on Piaget's Constructivism

a) Assimilation (Integrating Prior Knowledge with New Knowledge)

In Piaget's theory, assimilation occurs when individuals connect prior knowledge with new concepts without altering the underlying cognitive structure. The student assimilates local experiences and knowledge of Pandeglang culture with academic theories learned in

class. Evidence from slide 2 includes "Keraf (2010): Local wisdom is all forms of knowledge, beliefs, understandings, or customary practices that guide human behavior in society." "Sibarani (2012): Local wisdom is the indigenous knowledge of a community derived from noble cultural values to regulate social life."

The student does not merely cite theories but relates them to the cultural realities of Pandeglang. For example, when explaining *pencak silat* as a representation of moral values and resilience in local society, the student demonstrates the ability to integrate academic concepts with social realities they have understood since childhood. This process reflects assimilation between empirical/cultural experience and theoretical knowledge.

b) Accommodation (Adjusting Knowledge Structures)

In Piagetian terms, accommodation involves adjusting or changing cognitive structures to incorporate new information. The student demonstrates accommodation by presenting traditional local wisdom in a digital and modern format. Evidence from slides 6–9: the student explains the history and values of *pencak silat, seren taun, ngukus, anyaman,* and *debus*, linking them to concepts of cultural preservation and 21st-century education. For example, in the section on cultural preservation, the student writes "Conduct youth training, innovate products according to market demands, organize debus performances as part of cultural tourism."

This shows that the student not only understands culture as a tradition but also adapts their thinking to make it relevant to modern society and education. This process illustrates cognitive accommodation, as the student adjusts their knowledge schema to integrate cultural values within the context of technology and contemporary education.

c) Equilibration (Cognitive Balance)

Piaget emphasizes that optimal learning occurs when learners achieve equilibration, a balance between assimilation and accommodation. The student demonstrates cognitive balance by treating traditional culture and technological advancement as complementary elements. Evidence from slides 10–11 "Globalization and modernization cause the younger generation to be more interested in foreign cultures. Therefore, it is necessary to provide education and cultural activities to ensure the younger generation remains familiar with their traditions." The student recognizes that modern challenges do not require rejecting technology, but rather integrating local cultural values into contextual, project-based, and digital learning. This balance reflects reflective thinking maturity, in accordance with Piagetian principles.

d) Meaningful and Reflective Learning Activities

Piaget emphasizes that genuine learning occurs through direct activity, exploration, and self-reflection. M3 clearly demonstrates this process in their multimodal product. The student conducts literature research, information selection, content organization, and presentation design. Evidence from slides 12–14 the student presents strategies for teaching local wisdom to students using Project-Based Learning, Contextual Teaching and Learning, and Experiential Learning.

By selecting and describing these strategies, the student demonstrates deep understanding of active and constructive learning concepts. They not only describe culture

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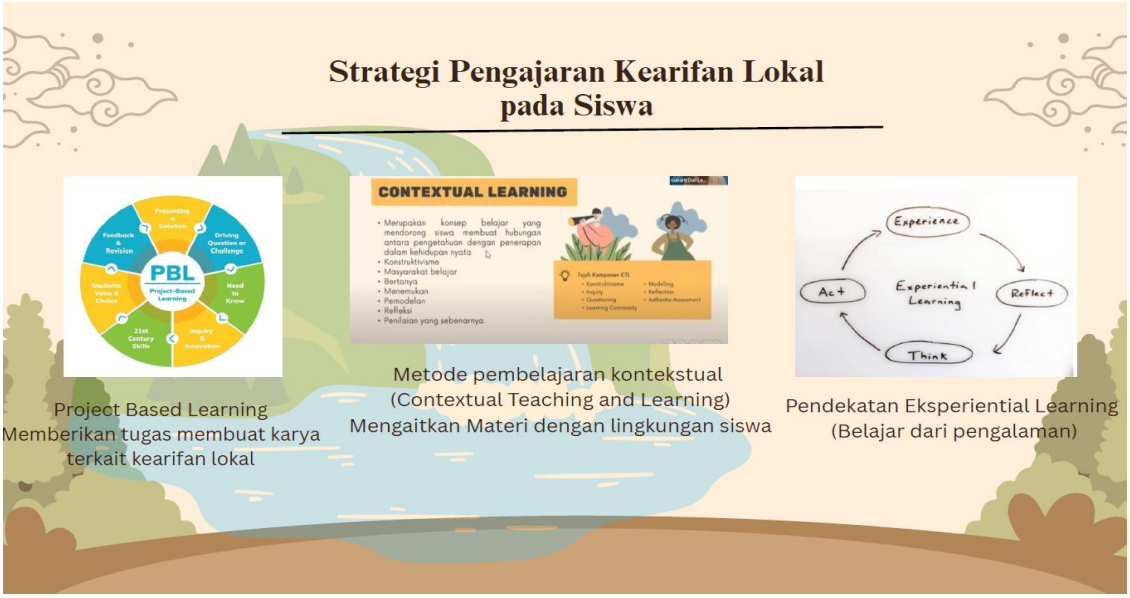
but also construct new ideas on how cultural values can be integrated into Indonesian language learning. This reflects Piaget's principle of learning by doing.

Figure 3

Multimodal Texts on the Teaching Strategies of Local Wisdom



d) Individual Knowledge Construction and Creativity

From Piaget's perspective, each individual constructs knowledge uniquely through personal experience and reflection. M3 demonstrates independent thinking and personal identity in the presentation of their work. Visual and narrative evidence includes the use of a motivational quote at the end of the slides:

"Strength lies in differences, not in similarities." Stephen Covey. Selection of distinct Pandeglang cultural examples, accompanied by historical context and spiritual values. Neat slide layout, formal language style, and a logical flow from theory to practice.

These elements indicate that the student does not merely produce an academic report, but also expresses cognitive identity and personal values. This process aligns with Piaget's concept that learning is the result of individual knowledge construction, which grows through social and cultural experiences as well as self-reflection.

Data M4

1. General Description of the Multimodal Text Product

The multimodal text produced by M4 is a digital presentation (PowerPoint slides) entitled "Local Wisdom of Pandeglang." The work features a combination of text, illustrative images, and digital links that enrich the information presented.

The structure of the presentation includes:

a. Definitions of local wisdom according to experts (Keraf, Sartini, Koentjaraningrat, Sumarmi).
b. Explanation and history of several forms of local wisdom in Pandeglang, such as *Rampak Bedug, Ritual Mapag Sri, Debus, Ruat Laut,* and *Batik Motif Badak*.
c. Efforts to preserve culture through education, digitalization, and economic empowerment.
d. Challenges in preserving local wisdom in the era of globalization.

e. Teaching strategies for integrating local cultural values into Indonesian language learning.

This structure demonstrates the student's understanding of a logical, scientific, and conceptual flow, moving from theory, cultural practice, to educational solutions. The presentation also shows integration of multimodal elements, such as text, digital links (source references), and visuals of Pandeglang culture, indicating a strong level of digital literacy.

2. Analysis Based on Piaget's Constructivism

a) Assimilation (Integrating Prior Knowledge with New Knowledge)

In Piagetian constructivism, assimilation is the process of integrating new knowledge into existing cognitive schemas. M4 connects their understanding of local culture with academic theories acquired during Indonesian language learning. Evidence from slide 2: "Keraf (2010): Local wisdom is the cultural identity of a nation that enables it to absorb and even adapt foreign cultures according to its own character and capabilities." "Koentjaraningrat (2015): Local wisdom is a system of cultural values that functions to regulate the social order of the community."

The student assimilates these theories with Pandeglang cultural phenomena, such as *Rampak Bedug* and *Ritual Mapag Sri*, demonstrating the ability to connect scientific theory with local social realities. This assimilation shows that the student has successfully linked academic conceptual frameworks with empirical experiences acquired as part of the local community.

b) Accommodation (Adjusting Knowledge Structures)

Accommodation occurs when individuals adjust or modify existing knowledge to fit new contexts. In M4's work, accommodation is evident in how the student understands and presents traditional local wisdom within a modern and digital framework. Evidence from slides 14–18 "Preservation through digitalization: documenting customary activities, collaborating with local media, creating e-books and articles on Pandeglang local wisdom."

Through these ideas, the student adapts traditional cultural perspectives to a modern, technology-based approach. They also view cultural preservation not merely as ritual, but as an educational and productive process through digitalization and economic empowerment "preservation through economic empowerment". This reflects cognitive accommodation, modifying thinking to meet the demands of the digital literacy era.

c) Equilibration (Cognitive Balance)

Piaget defines equilibration as the process of achieving balance between assimilation and accommodation. In this work, the student attains cognitive balance between preserving traditional values and embracing modern innovation. Evidence from slide 20 "Globalization, declining interest among youth, commercialization of culture, limited documentation, and insufficient financial support." However, in the following slide on teaching strategies, the student proposes solutions "Integration into the curriculum, contextual learning (cultural visits), hands-on practice (e.g., Rampak Bedug), digital media (student creative content), collaboration with local cultural figures."

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This balance demonstrates the student's ability to reach cognitive equilibrium, resolving conflicts between globalization challenges and cultural preservation needs through education- and technology-based solutions. This reflects intellectual maturity, as the student demonstrates reflective and solution-oriented thinking according to Piaget.

d) Meaningful Learning Activities (Learning by Doing)

Piaget emphasizes that genuine learning occurs through direct activity and reflection on experience. M4 demonstrates meaningful learning through source exploration, cultural description writing, and project-based preservation strategy development. Examples include "Preservation through Education: integrating local wisdom into local curriculum, organizing cultural art extracurriculars, visits to customary sites." "Preservation through Digitalization: publishing customary activities and collaborating with local media."

These activities reflect reflective and applied thinking, where the student not only understands theory but constructs understanding through experience, discovery, and creative action. This embodies the learning by doing principle, learning through creation rather than mere reception.

e) Individual Knowledge Construction

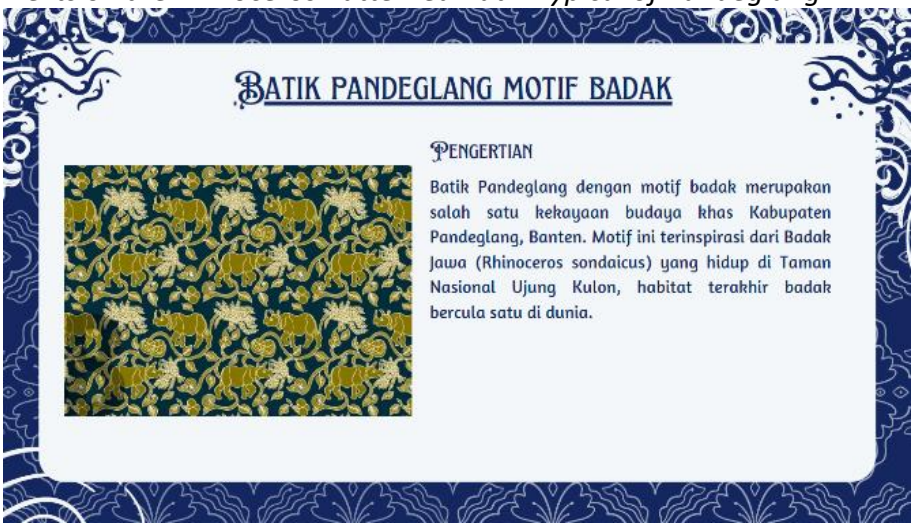
Piaget views each individual as an active subject in constructing knowledge based on personal experience. M4 demonstrates thinking identity and personal knowledge construction through presentation style, topic selection, and emphasis on specific values. Visual and textual evidence:

a. Use of Pandeglang cultural visuals (bedug, batik, laut) emphasizes local identity.
b. Selection of diverse sub-themes (Rampak Bedug, Mapag Sri, Ruat Laut, Batik Badak) shows broad cultural exploration.
c. Systematic presentation with digital sources demonstrates scientific and modern orientation.

These elements indicate that the student does not merely replicate sources, but reinterprets culture with a personal and contextual perspective. This is a clear manifestation of individual knowledge construction, which is central to Piaget's theory.

Figure 4

Multimodal Texts on the Rhinoceros Patterned Batik Typical of Pandeglang



Data M5

1. General Description of the Multimodal Text Product

The multimodal text produced by M5 is a digital presentation (PowerPoint slides) entitled "Local Wisdom of Pandeglang." The work contains informative text combined with visual elements, including colored layouts, clear typography, and illustrative images of local culture. The structure of the presentation includes:

a. Definitions of local wisdom according to several experts.
b. Types of local wisdom in Pandeglang (debus, rampak bedug, seren taun, dogdog lojor, and angklung).
c. Cultural values embedded in local wisdom.
d. Challenges in preservation in the era of globalization.
e. Teaching strategies based on local wisdom.

This structure demonstrates the student's ability to organize academic texts systematically from conceptual to contextual aspects. The work is educational and multimodal, combining academic text, cultural visuals, and a communicative digital presentation style.

2. Analysis Based on Piaget's Constructivism

a) Assimilation (Integrating Prior Knowledge with New Knowledge)

In Piaget's view, assimilation is the process of relating prior experiences to new knowledge gained through learning. M5 assimilates their prior knowledge of local culture, which they have known since childhood, with academic theories learned in Indonesian language courses. The student cites experts such as Koentjaraningrat and Keraf and connects their definitions with Pandeglang traditions like debus and rampak bedug as manifestations of local values.

This demonstrates that the student is able to link scientific concepts (local wisdom according to scholars) with empirically experienced cultural realities. This process reflects cognitive assimilation, where the student enriches their understanding of local culture with new academic perspectives without losing the original meaning.

b) Accommodation (Adjusting Knowledge Structures)

Accommodation occurs when individuals adjust or modify prior understanding to incorporate new information or contexts. M5 demonstrates accommodation by presenting Pandeglang traditional culture in a modern digital format while linking it to 21st-century learning. Evidence from slides 6–9: The student explains that rampak bedug is not merely entertainment but also represents "a form of togetherness, spirit, and identity of the Pandeglang community, which can be taught as character education values."

By framing local tradition as a medium for character education, the student demonstrates adjustment from traditional thinking to a modern educational framework. Additionally, the use of a digital presentation reflects accommodation to the demands of digital literacy in the era of globalization.

c) Equilibration (Cognitive Balance)

Piaget emphasizes that optimal learning occurs when equilibrium is achieved between assimilation and accommodation. M5 demonstrates cognitive balance by

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integrating cultural preservation with modern adaptation. Evidence from the slides "The flow of globalization threatens the preservation of local culture. Innovation, education, and youth participation are required to preserve Pandeglang culture."

This shows the student's awareness that traditional values should not be abandoned but must be adapted and revitalized to remain relevant in the digital era. The balance between maintaining old values and accommodating new ones reflects cognitive equilibration, in line with Piaget's theory.

d) Meaningful Learning Activities (Learning by Doing)

Piaget views knowledge as constructed through direct experience and reflective activity. M5 demonstrates learning by doing through cultural exploration and creating a digital multimodal product. Examples from the slides "Linking materials with students' environment (contextual learning), conducting cultural visits, and creating digital projects about local traditions." These activities indicate that the student understands learning is not just about receiving theory, but also involves creating, interacting, and interpreting. The process of data collection, information processing, and presentation preparation demonstrates active and reflective engagement in constructing new knowledge.

e) Individual Knowledge Construction

Piaget emphasizes that each individual constructs knowledge uniquely based on personal experience and reflection. M5 shows personal identity and creativity through topic choice, language, and visual presentation.
Visual and textual evidence:

a. Use of soft, consistent colours on slides;
b. Selection of local cultural topics familiar to the student (debus, seren taun);
c. Formal, structured language demonstrating academic thinking.

This shows that the student does not merely repeat information, but constructs their own understanding of local cultural values in a modern context. The work demonstrates intellectual independence and personal characteristics as an active and reflective learner.

Figure 5.
Multimodal Texts on the Types of Local Wisdom in Pandeglang

5. Conclusion

Based on the findings, it can be concluded that the creation of multimodal texts by university students themed around local wisdom in the digital literacy era demonstrates a learning process aligned with Jean Piaget's constructivist theory. First, in the assimilation stage, students connected their prior knowledge of local culture with the theories learned in their coursework. They successfully integrated personal experiences and academic knowledge into their multimodal works. Second, in the accommodation stage, students adjusted their ways of thinking and presented local cultural values in digital formats that were engaging and easy to understand. This form of presentation reflected students' ability to adapt to technological developments and the demands of modern times. Third, in the equilibration stage, students balanced the preservation of traditional values with the needs of modernization. They did not abandon local culture; rather, they utilized it as a creative and contextual learning resource.

The process of producing multimodal texts also demonstrated the principle of *learning by doing*, in which students learned directly through activities of creating, researching, and presenting their work. Moreover, each student's multimodal product exhibited distinct visual and narrative styles, indicating individual knowledge construction and unique cognitive patterns. Overall, the study shows that Indonesian language learning through a constructivist approach and the use of multimodal media can help students to become more active and creative in the learning process, develop critical and reflective thinking skills, and foster pride in their own local culture.

In other words, the creation of multimodal texts not only enhances students' academic competence but also shapes their character, creativity, and cultural awareness in today's digital era.

This study, however, has several limitations that should be noted. First, the scope of the research was limited to students from a single study program at one university namely, the Indonesian Language, Literature, and Regional Education Program, Faculty of Teacher Training and Education, Mathla'ul Anwar University, Banten. Consequently, the findings cannot yet be generalized to other higher education contexts that may have different student characteristics, resources, and local cultural backgrounds. Furthermore, the study's focus on the local wisdom of Pandeglang provided contextual depth but limited exploration of other regional cultural forms across Indonesia that may display different patterns of multimodal practice and knowledge construction.

Another limitation lies in the methods of data collection and analysis. This study relied solely on multimodal text products and observation of the creation process, without including in-depth interviews or written reflections to further explore the cognitive and affective dimensions of students' constructivist learning processes. As a result, interpretations of students' thinking processes and the meanings they constructed remain descriptive and do not fully capture the internal dynamics of knowledge construction. Future studies are recommended to adopt more triangulated approaches for example, by incorporating interviews, multimodal discourse analysis, or comparative regional studies to obtain more comprehensive insights and strengthen both theoretical and practical contributions to the development of constructivist and multimodal-based learning in Indonesian language education.

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