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THE INFLUENCE OF CLAY MEDIA ON THE EMOTIONAL REGULATION ABILITY OF CHILDREN AGED 5-6 YEARS IN THE ISLAMIC KINDERGARTEN OF AL AZHAR 32 PADANG

Siti Safira[1] Nurhafizah[2] Yaswinda[3] Asdi Wirman[4]
[1,2,3,4]*Universitas Negeri Padang*
Correspondence: nurhafizah@fip.unp.ac.id

Abstract

Investigating the impact of clay-based activities on the emotional management skills of five to six-year-old pupils at Taman Kanak-Kanak Islam Al Azhar 32 Padang served as the primary objective of this inquiry. Early childhood social and emotional maturation relies heavily on the capacity to regulate feelings, as this allows youngsters to identify, govern, and manifest their internal states in a balanced manner across diverse environments. To achieve this, a quantitative investigation was conducted, utilizing a quasi-experimental framework structured around a Nonequivalent Control Group Design. Thirty-four participants were recruited via cluster sampling and divided equally into an experimental cohort and a control group, each containing 17 children. While the former group engaged in structured clay modeling, the latter focused on unguided drawing exercises. Primary data were gathered through observational records alongside archival evidence, followed by rigorous statistical verification including validity, reliability, normality, and homogeneity testing, culminating in an Independent Samples t-test processed via IBM SPSS Statistics version 29. Baseline measurements taken prior to the intervention confirmed the absence of meaningful disparities, supported by a significance level of 0.898 which exceeds the 0.05 threshold. Conversely, post-intervention scrutiny yielded a significance value of 0.023, falling below the 0.05 limit and confirming a substantial variance in outcomes between both groups. With an average post-test performance of 21.12, the experimental cohort outperformed their control counterparts, who achieved an average of 19.35. These results demonstrate that clay modeling offers a potent, constructive influence on the development of emotional control in children aged five to six. Consequently, educators may consider clay a valuable instructional instrument for fostering social and emotional growth within preschool settings.

Keywords: clay media, emotional regulation, early childhood, quasi experiment, social-emotional development

INTRODUCTION

Formal instruction functions as a structured and perpetual endeavor aimed at cultivating human potential, ensuring individuals thrive both personally and within the communal sphere. Beyond mere knowledge dissemination, the educational framework serves as a crucible for character building, value cultivation, and life skills acquisition, thereby acting as a pivotal driver in forging human capital capable of navigating societal flux (Affandi, 2021). Such objectives align seamlessly with the foundational mandate of the 1945 Constitution of the Republic of Indonesia Article 31 Paragraph (1), which enshrines the egalitarian right of every citizen to access education free from any form of exclusion.

High-quality pedagogical intervention must commence during the foundational years, as the window from birth to age six constitutes a critical epoch that essentially dictates developmental trajectories. Within this timeframe, neural architecture undergoes rapid maturation, rendering each external input a cornerstone for the child's cognitive, social, emotional, linguistic, physiological, moral, and personality growth. These developmental dimensions exist in a state of reciprocal influence, meaning that any deficit in one domain inevitably impedes the progress of others.

A cornerstone of early childhood maturation is the refinement of social-emotional competencies, specifically the ability to perceive one's inner state, govern affective responses, and foster interpersonal connections. Erikson's framework on psychosocial progression identifies the five-to-six-year-old cohort as being situated in the initiative versus guilt stage, characterized by the nascent development of

purposeful action, accountability, and the confidence to express oneself. Consequently, children require targeted environmental support to cultivate adaptive behaviors and mitigate challenges associated with the regulation of their affective states.

Central to this social-emotional growth is the mastery of emotional regulation, which involves the recognition, modulation, and appropriate outward expression of feelings relative to environmental demands. Given that these skills are currently in their formative stages, early learners frequently encounter obstacles in managing their impulses. According to the conceptualization by Gross, this regulatory process entails the ways in which an individual influences which emotions they experience, the timing of their emergence, and the manner of their outward manifestation. Proficiency in these regulatory mechanisms empowers children to monitor their conduct, adjust to situational changes, and establish stable social bonds (Suyanto, 2020).

In practice, the attainment of these emotional management skills often remains suboptimal. Children frequently manifest behavioral patterns such as irritability, excessive outbursts, challenges in turn-taking, and limited collaborative capacity with peers. Such conditions can obstruct pedagogical engagements and social integration, potentially precipitating long-term difficulties as they transition into subsequent schooling phases. This aligns with Erikson's postulations, which suggest that deficiencies in emotional management during this developmental juncture can undermine self-assurance and foster internal feelings of culpability. Empirical evidence (Purwati et al., 2023) highlights that early emotional regulation scores often reside in the lower tier, averaging 18.21 prior to external intervention, while (Ulumiyah, 2021) observed that more than half of the observed cohort struggled with effective impulse control.

An increasing body of scholarship indicates that pliable and manipulable materials, such as clay or modeling wax, serve as potent catalysts for enhancing early emotional regulation. Studies by (Sudiyanto & Andrio, 2020) demonstrate that interaction with clay-based substances significantly diminishes negative affective states and markers of anxiety in young learners. Findings reported by (Purwati et al., 2023) further corroborate this, noting an elevation in emotional regulation scores from an average of 18.21 to 28.21 following engagement with modeling media. Furthermore, artistic endeavors have been empirically validated as mechanisms for assisting children in channeling emotions, reinforcing self-regulation, and cultivating more constructive behavioral habits (Ulumiyah, 2021).

Fostering emotional regulation during early childhood necessitates the implementation of learning activities that resonate with the developmental nature of the child, specifically utilizing a play-based framework. Play-centric approaches provide children with naturalistic avenues to explore their surroundings, externalize inner feelings, and hone their social-emotional capacities, ultimately imbuing the learning experience with greater significance. Among various forms of play, artistic expression stands out as an effective medium for the manifestation of emotional states.

Guided by the principles of therapeutic art as outlined by Kramer, creative activities enable individuals to externalize affective states, alleviate internal tension, and bolster self-regulation mechanisms. For young learners, such activities offer a highly effective avenue for expression, as the translation of feelings into nonverbal forms is more intuitive at this age (Suyadi & Dahlia, 2022). Clay represents a particularly suitable artistic medium due to its malleability, ease of manipulation, capacity for immediate sensory stimulation, and its role in cultivating patience, focus, and self-command during the creative cycle. B.F. Skinner's behavioral perspective posits that conduct is forged through the interplay of stimuli and responses, solidified by reinforcing consequences. Within this investigation, clay serves as an environmental stimulus providing direct experience for emotional expression, while the instructor provides positive reinforcement for desired behavioral responses. Given these considerations, clay offers a compelling and enjoyable pedagogical alternative for elevating emotional regulation. It is upon this premise that the present study, titled The Influence of Clay Media on the Emotion Regulation Ability of Children Aged 5-6 Years at Al Azhar Islamic Kindergarten 32 Padang, was formulated.

RESEARCH METHODS

To evaluate the impact of clay-based instructional materials on the affective management capabilities of five to six-year-old pupils at Al Azhar Islamic Kindergarten 32 Padang, this inquiry adopts a quantitative framework underpinned by a quasi-experimental approach, specifically utilizing a Nonequivalent Control Group Design (Sugiyono, 2017). Out of a total population of 83 children, a subset of 34 subjects was recruited through cluster sampling; these participants were divided into two cohorts of 17, with class B Mina designated as the experimental group and class B Makkah functioning as the control group (Sugiyono, 2022). While the former cohort underwent intervention through the utilization of clay-based media, the latter participated in conventional classroom instruction devoid of this specific material. To ascertain the shift in performance across both groups, researchers conducted systematic assessments via pre-test and post-test procedures.

The evaluative tool employed throughout this study consists of an observational record constructed upon the conceptual foundations of emotional regulation as proposed by Gross and subsequently adapted for localized context by Suyadi (2020), encompassing the identification, governance, and manifestation of feelings. The instrument's integrity was confirmed through rigorous testing, as every individual item achieved validity with calculated values exceeding the critical threshold (rcount > rtable = 0.482), while internal consistency was verified by a reliability coefficient of 0.853 (Hulu & Sinaga, 2019). Data gathering relied on a combination of direct observational recording and the analysis of archival documentation (Sugiyono, 2022). Subsequently, the datasets were subjected to statistical processing via IBM SPSS Statistics version 29, which included the verification of validity, reliability, normality, and homogeneity, culminating in an Independent Sample t-test at a 0.05 significance level to measure the influence of clay media on the subjects' capacity for emotional regulation.

RESULTS AND FINDINGS

Normality Test

The pre-test and post-test data obtained from the research process were first analyzed using a normality test to determine whether the data were normally distributed. The results of the pre-test and post-test normality tests are shown in the following table

Table 1. Pre-test Normality Test

Tests of Normality

		Kolmogorov-Smirnov			Shapiro-Wilk		
Kelas		Statistic	df	Sig.	Statistic	df	Sig.
Hasil	Pre-test Eksperimen	0,195	17	0,085	0,922	17	0,160
	Pre-test Kontrol	0,195	17	0,085	0,914	17	0,115

a. Lilliefors Significance Correction.

Applying the Shapiro-Wilk protocol to assess data distribution yielded a significance coefficient of 0.160 for the experimental cohort and 0.115 for the control cohort. Given that both calculated values comfortably exceed the 0.05 threshold, it can be mathematically inferred that the pre-test measurements across both subject groups conform to a normal distribution pattern.

Tabel 2. Post-test Normality Test

Tests of Normality

		Kolmogorov-Smirnov			Shapiro-Wilk		
Kelas		Statistic	df	Sig.	Statistic	df	Sig.
Hasil	Pre-test Eksperimen	,255	17	,005	,926	17	,189
	Pre-test Kontrol	,149	17	,200	,957	17	,570

a. Lilliefors Significance Correction.

Regarding the Shapiro-Wilk post-intervention assessment, the experimental cohort registered a significance coefficient of 0.189, whereas the control cohort reached 0.570. Since both metrics reside above the 0.05 limit, it can be mathematically confirmed that the post-test datasets for both groups conform to a normal distribution.

Homogeneity Test

After conducting the normality test, the next step was to conduct a homogeneity test to assess the similarity of data variances using the Levene test

Table 3. Pre-test Homogeneity Test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Result	Based on Mean	,653	1	32	,425
	Based on Median	,501	1	32	,484
	Based on Median and with adjusted df	,501	1	30,797	,484
	Based on trimmed mean	,551	1	32	,463

The application of Levene's Test yielded a significance coefficient of 0.425. Since this statistical output surpasses the 0.05 benchmark, the variance within the pre-test datasets for both cohorts is considered uniform. Consequently, this outcome confirms that the two groups possessed equivalent levels of proficiency prior to the commencement of the study.

Table 4. Post-test Homogeneity Test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Result	Based on Mean	,297	1	32	,590
	Based on Median	,013	1	32	,910
	Based on Median and with adjusted df	,013	1	25,683	,910
	Based on trimmed mean	,257	1	32	,616

The post-intervention homogeneity analysis, executed via Levene's Test, yielded a significance coefficient of 0.590. Given that this statistical value resides comfortably above the 0.05 threshold, it establishes that the variance between the two groups is uniform, thereby confirming the homogeneity of the post-test datasets.

Table 5. Pre-test Hypothesis Test Results

Test of Homogenelty of Variance

		Levene Statistic	df1	df2	Sig.
Result	Based on Mean	,653	1	32	,425
	Based on Median	,501	1	32	,484
	Based on Median and with adjusted df	,501	1	30,797	,484
	Based on trimmed mean	,551	1	32	,463

The hypothesis testing phase revealed that the experimental cohort commenced with an average score of 13.76, while the control cohort recorded a mean of 13.65. When synthesized, these values demonstrate a notable degree of parity between the groups, establishing that their baseline competencies in emotional self-regulation were essentially equivalent prior to the administration of any targeted pedagogical intervention.

Table 6. Post-test Hypothesis Test Results

Group Statistic

	Kelas	N	Mean	Std. Deviation	Std. Error Mean
Result	Post-test Eksperimen	17	19,35	2,370	,575
	Post-test Kontrol	17	21,12	1,900	,461

Regarding the hypothesis testing outcomes, the experimental cohort registered a post-intervention mean score of 21.12, whereas the control group attained an average of 19.35. These figures provide clear evidence that the proficiency levels in emotional self-governance among children subjected to the specific intervention were superior to those of their counterparts who did not receive the treatment.

Independent Sample T-Test

An independent sample t-test was conducted to measure significant differences between the pre-test and post-test results in both research classes. The results of the independent test are shown in the following table:

Table 7. Independent Samples t-test Pre-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Hasil	Equal variances assumed	0,653	0,425	0,129	32	0,449	0,898	0,118	0,909	-1,735	1,970
	Equal variances not assumed	–	–	0,129	30,446	0,449	0,898	0,118	0,909	-1,738	1,974

Statistical scrutiny via the Independent Samples t-test yielded a Levene's Test significance coefficient of 0.425, a figure exceeding the 0.05 threshold and thereby confirming that the variance across both cohorts remains homogeneous. Furthermore, an examination of the two-tailed significance value revealed a score of 0.898, which likewise surpasses the 0.05 benchmark. In light of these findings, the null hypothesis, H_0, is upheld while the alternative hypothesis, H_a, is formally dismissed, establishing that no statistically meaningful disparity existed between the experimental and control groups prior to the execution of the research intervention.

Table 8. Independent Samples t-test Post-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Hasil	Equal variances assumed	,297	,590	-2,395	32	,110	,023	-1,765	,737	-3,265	-,264
	Equal variances not assumed	–	–	-2,395	30,554	,011	,023	-1,765	,737	-3,268	-,261

In view of the Independent Samples t-test outcomes, the Levene's Test generated a significance coefficient of 0.590, a value exceeding the 0.05 threshold and thereby affirming that the variance across both groups is uniform. Additionally, the two-tailed significance value of 0.023 falls beneath the 0.05 limit. Consequently, the null hypothesis, H_0, is formally discarded in favor of the alternative hypothesis, H_a. These findings conclusively demonstrate a substantial discrepancy between the experimental and control cohorts, providing empirical validation that the incorporation of clay-based materials exerts a measurable influence on the emotional self-governance capabilities of children between the ages of five and six at Al Azhar Islamic Kindergarten 32 Padang.

RESULTS AND DISCUSSION

The analytical findings reveal that, prior to the introduction of any intervention, there was no statistically meaningful divergence in the emotional self-governance capacities of the experimental and control cohorts at Al Azhar Islamic Kindergarten 32 Padang. This equivalence is confirmed by a two-tailed significance coefficient of 0.898, which exceeds the standard 0.05 probability threshold. Emotional regulation, defined as the individual aptitude for perceiving, modulating, and appropriately manifesting internal states to avoid impulsive conduct (Tito et al., 2024), aligns with the perspective of James Gross and John, who characterize it as the habitual process of experiencing, managing, and showcasing affect (Mahmudatunnisa et al., 2024). Such development remains subject to a interplay of intrinsic and extrinsic variables, primarily the child's engagement with their immediate surroundings (Kamilla & Putri, 2025).

Following the implementation of the intervention, wherein the experimental group utilized clay-based media and the control group engaged in undirected drawing, the calculated two-tailed significance dropped to 0.023, falling well below the 0.05 limit. This outcome suggests that clay-based activities exert a potent influence on the emotional regulation of children between five and six years old. These observations resonate with the theory proposed by Thompson, which frames emotional regulation as a deliberate sequence of monitoring, evaluating, and recalibrating responses to reach specific objectives (Vienlentia, 2021). The efficacy of this regulatory capacity is further shaped by home-based pedagogical patterns that dictate how youngsters learn to govern and reveal their feelings from an early age (Nathasya, 2024).

These conclusions are corroborated by (Zakiyah & Nurhafizah, 2021), who posit that emotional regulation matures through an ongoing cycle of social engagement and meaningful learning. Early learners require frequent opportunities to interact, collaborate, and formulate appropriate responses to diverse social challenges to reach optimal developmental milestones. Consequently, educators occupy a critical position in constructing an environment that fosters social-emotional growth through stimulating and age-appropriate tasks.

From a descriptive standpoint, the experimental cohort achieved an average post-test score of 21.12, contrasting with the 19.35 mean recorded in the control class. While the experimental subjects consistently reached the Advanced level, the control cohort still included participants within the Capable tier. Such data confirms that clay-based media is superior in prompting children to identify, govern, and manifest emotions in a healthy manner. This aligns with the viewpoint of Suyadi (2020), who maintains that effective emotional regulation is measurable through the consistent identification of feelings, controlled affective behavior, and positive expression. These results further support the developmental standards for five-to-six-year-olds outlined in the Minister of Education and Culture Regulation Number 5 of 2022 regarding self-management, interpersonal collaboration, and environmental adaptation (Nur Afiah et al., 2025). Conversely, inadequate external input can stagnate the maturation of these essential regulatory skills (Aini, 2021).

Moreover, (Zakiyah & Nurhafizah, 2021) stress that social-emotional competence encompasses the capacity to cooperate with age-mates, practice sharing, communicate clearly, manage turn-taking, and maintain composure in daily scenarios. These abilities emerge incrementally through repeated practice, underscoring the necessity of classroom tasks that prioritize collaboration during the foundational years.

The utility of clay is rooted in its concrete, malleable nature, which facilitates hands-on learning. Pedagogical tools are essential for capturing children's focus, curiosity, and affective responses throughout the instructional cycle (Jauza & Albina, 2025). Utilizing high-utility materials simplifies conceptual understanding, boosts participation, minimizes cognitive errors, and optimizes the

pedagogical process (Muryaningsih, 2021; Sari & Wulandari, 2023; Saleh et al., 2023). Furthermore, clay acts as a creative conduit for manipulative tasks and sensory engagement, allowing children to channel their inner states into constructive outcomes. Given that young children often lack the linguistic maturity to verbalize their feelings, concrete media become indispensable. Engaging with clay can alleviate emotional strain while simultaneously cultivating patience and impulse control (Gross in Nurhayati, 2020).

In this inquiry, clay-based tasks afforded pupils the space to socialize, work in teams, and manage shared resources. Throughout these sessions, children practiced waiting for their turn, expressing themselves clearly, collaborating to achieve targets, and tempering their affective responses to changing scenarios. Such findings reflect the work of (Nurhafizah & Kosnin, 2017), who demonstrated that social-emotional expertise is nurtured via play and interaction, enabling children to refine cooperation, self-command, empathy, and social respect within their daily routines.

These results are further underscored by prior studies indicating that manipulating soft, tactile materials exerts a calming effect, lowers anxiety, and aids in the modulation of children's emotional states (Sudiyanto & Andrio, 2020). Working with clay acts as a form of nonverbal therapy for emotional expression while concurrently strengthening fine motor skills through rolling, squeezing, and sculpting (Twuentika et al., 2025). This aligns with constructivist theory, which highlights the role of direct experience in building mental frameworks (Astuti, 2019), provided there is adequate teacher-led preparation prior to the activity (Pratiwi, 2022).

The data emphasize the necessity of providing targeted input during the golden age of early childhood, a period uniquely susceptible to environmental triggers (Izzati & Yulsyofriend, 2020; Suryana et al., 2021). Social-emotional progress occurs in phases, demanding media that is carefully aligned with the specific nature of the child (Syahrul & Nurhafizah, 2021; Silranti & Yaswinda, 2019). Given that children at this developmental stage often exhibit egocentric traits and suboptimal emotional management (Mursid, 2020; Khadijah, 2020; Hasnida, 2019), clay offers a reliable alternative for facilitating positive emotional identification, control, and expression (M. Husna & Mayar, 2022; Sujiono, 2020).

Furthermore, (Nurhafizah & Kosnin, 2017) observed that social-emotional competence must be consistently fostered from the outset, as it establishes the framework for all future development. Educators are urged to curate meaningful, enjoyable sessions that encourage active involvement, interpersonal connection, and experiential learning. Consequently, the use of clay in this study provided an environment perfectly suited to supporting emotional regulation through active, play-oriented social engagement.

In conclusion, this evidence confirms that the integration of clay is more efficacious than undirected drawing for bolstering the emotional regulation of children between the ages of five and six. By engaging in play that incorporates sensory, motor, and creative elements, children demonstrate a superior ability to recognize, govern, and manifest their emotions constructively. Therefore, clay-based media serves as a viable alternative for supporting social-emotional maturation, ultimately fostering a more active, stimulating, and profoundly meaningful pedagogical experience.

CONCLUSION AND SUGGESTIONS

Conclusions

Drawing from the findings of this inquiry, it is evident that the application of clay-based materials exerts a substantial influence on the emotional regulation proficiencies of pupils aged five to six at Al Azhar Islamic Kindergarten 32 Padang. Initial baseline assessments revealed no meaningful discrepancy between the experimental and control cohorts, as evidenced by a significance coefficient of 0.898, confirming that both groups commenced the study with comparable aptitudes. However, the subsequent Independent Samples t-test applied to post-intervention data yielded a significance value of 0.023, underscoring a distinct statistical variance between the two groups. With an experimental mean score of 21.12 against the control group’s 19.35, the data validates that clay modeling serves as a more potent catalyst for enhancing emotional management than unstructured drawing exercises.

Suggestions

Interacting with clay offers youngsters vital avenues to perceive, govern, and manifest their inner states through play-based sessions that prioritize tactile and kinetic engagement. Consequently, clay stands as a highly effective pedagogical alternative for bolstering social-emotional growth, particularly

regarding the development of impulse and emotional control within preschool settings. It is further recommended that these findings serve as a foundational resource for practitioners in crafting instructional activities that are not only more diverse and innovative but also precisely aligned with the unique developmental requirements of early childhood learners.

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