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# Bridging the Gap: The Role of the 'ART'UISM Program' in Enhancing Cognitive Abilities and Community Acceptance for Children with Autism

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## ABSTRACT

*This study evaluates the effectiveness of the 'ART'UISM: Artistic-Intuition-Autism Program' in enhancing creative expression and cognitive development in children with autism. This program has been designed to promote art as a therapeutic activity and further develop the psychomotor and cognitive skills of children with autism. Pre- and post-survey questionnaires were administered to parents/family members to measure the program's effectiveness. The study included 18 children diagnosed with Autism Spectrum Disorder. Results indicate significant improvements in colour identification, shape recognition, attention span, task completion, acquisition and learning of new activities, self-confidence, and emotional regulation. The supportive environment created by the program allowed each participant to feel safe and respected, encouraging their creative expression. Based on these results, the study demonstrates that art therapy can facilitate multifaceted development in children diagnosed with autism and positively influence society's perception and acceptance of these children.*

***Keywords:*** *Autism Spectrum Disorder (ASD), Community Program, Learning Skill and Community Acceptance, Program Impact*



## 1 INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by social communication challenges, restricted interests, and repetitive behaviours (American Psychiatric Association, 2013). Children with autism often demonstrate unique cognitive strengths and distinctive sensory processing abilities (Van Lith et al., 2017). In recent years, art therapy has emerged as an effective intervention for improving intellectual, emotional, and social functioning in individuals with autism (Epp, 2008; Martin, 2009). Studies show that socializing and communicating can be significant challenges for many autistic children, with communication difficulties being particularly common (Zulkefli & Rabi, 2018).

Despite the growing recognition of art therapy's benefits, there remains a significant gap in structured community-based art programs specifically designed for children with autism in Malaysia, particularly in Sarawak. While previous studies have documented the therapeutic effects of art interventions in clinical settings, fewer studies have examined the impact of community-based art programs on both skill development and societal acceptance. This research gap is particularly concerning given the increasing prevalence of ASD diagnoses and the need for accessible, evidence-based interventions beyond traditional clinical environments. Technology and visual tools have shown promise in assisting individuals with ASD to enhance their communication abilities (Zulkefli & Rabi, 2021; Hassan et al., 2022), yet there is limited research on how art-based programs might leverage these approaches in community settings.

The 'ART'UISM: Artistic-Intuition-Autism Program' was developed to address these gaps by providing a structured, community-based platform for autistic children to express themselves through art. The objectives of this study were to:

1. Evaluate the effectiveness of diverse art activities in enhancing cognitive and psychomotor functions in children with autism
2. Assess changes in emotional regulation and social interaction skills following program participation
3. Determine whether such a community-based program could increase public awareness and acceptance of children with autism
4. Contribute to the empirical evidence base for art therapy as an effective intervention in autism management

Through this research, we aim to provide valuable insights into how community-based art programs can serve as both therapeutic interventions and vehicles for promoting greater societal understanding and acceptance of children with autism.

## 2 LITERATURE REVIEW

Art therapy has established itself as an effective intervention for individuals on the autism spectrum, supporting the development of various skills including self-expression, emotional regulation, and social interaction (Epp, 2008; Martin, 2009). Research indicates that engaging in artistic activities enables children with ASD to develop visual-spatial awareness, improve hand-eye coordination, and enhance attention and concentration abilities (Emery, 2004; Schweizer et al., 2014). Furthermore, art provides an alternative communication channel for children who struggle with verbal expression, allowing them to convey ideas and emotions through visual means (Epp, 2008; Martin, 2009; Hassan et al., 2023). Previous research by Hassan et al. (2024b) has demonstrated that visual-spatial abilities can influence speech fluency through cognitive and affective factors, suggesting that arts-based approaches may leverage the visual strengths of children with autism to unlock communication abilities.

Studies examining cognitive outcomes have demonstrated that art-based interventions can improve problem-solving abilities, decision-making skills, and visual-spatial processing in children with autism (Drake, 2018; Safar & Siraj, 2020). Additionally, artistic activities have been shown to promote feelings of calmness and joy, reducing anxiety and fostering positive emotional states (Chu et al., 2021; Emery, 2004).

While these findings highlight the individual benefits of art therapy for children with autism, there are notable limitations in the existing literature. Many studies employ small sample sizes, limiting generalizability, and few distinguish between different types of artistic activities or consider their relative effectiveness (Safar & Siraj, 2020). Furthermore, most research has focused on clinical settings rather than community-based interventions, creating a gap in understanding how art programs function in real-world contexts.

The social dimension of art therapy extends beyond individual benefits to community integration. Humphrey and Lewis (2008) and Symes and Humphrey (2011) emphasize that supportive environments with educational components and community involvement are crucial for promoting development and acceptance of individuals with autism. Community-based programs can foster inclusion by raising awareness and understanding about autism, potentially transforming societal perceptions and attitudes (Humphrey & Lewis, 2008; Symes & Humphrey, 2011). This understanding aligns with research by Hassan et al. (2024) who identified that building inclusive communities requires addressing societal awareness and implementing integrated support systems for families with autistic children in Malaysia.

However, there is limited research examining how community art programs specifically impact public perceptions of autism. Most studies focus either on individual therapeutic outcomes or on broader autism awareness initiatives, with few investigating how art-based programs might simultaneously address both therapeutic needs and community acceptance. Additionally, research in non-Western contexts, particularly in Malaysia, is notably scarce, raising questions about cultural variations in program effectiveness and community response. Studies by Hassan et al. (2024) have begun to address this gap by examining expert perspectives on support systems for families with autistic children in Malaysia, but more focused research on arts-based community interventions is needed.

Our study aims to address these gaps by evaluating a community-based art program that targets both individual development and social acceptance within the Malaysian context, specifically in Sarawak. By examining multiple outcome domains and considering both individual and community perspectives, we hope to contribute to a more comprehensive understanding of how art therapy can serve as a bridge between therapeutic intervention and social inclusion for children with autism.

# 3 METHODOLOGY

## 3.1 Research Design

This study employed a quasi-experimental pre-test post-test design to evaluate the effectiveness of the 'ART'UISM: Artistic-Intuition-Autism Program.' This design was selected to allow for the measurement of changes in participants' abilities and behaviours before and after the intervention.

## 3.2 Program Setting and Implementation

The 'ART'UISM: Artistic-Intuition-Autism Program' was conducted on February 17, 2024, at La Promenade Mall, Kuching, Sarawak. The program featured a variety of structured art activities including:

1. Guided colouring sessions with specialized materials
2. Painting workshops using different techniques and mediums
3. Interactive role-playing activities with artistic components
4. Collaborative art projects encouraging social interaction

These activities were facilitated by qualified instructors with experience in both art education and working with children with special needs. Each session lasted approximately 45 minutes, with appropriate breaks to accommodate the attention spans and sensory needs of the participants.

## 3.3 Participants

The study recruited 18 children diagnosed with Autism Spectrum Disorder, ranging in age from 6 to 12 years ($M = 8.4$, $SD = 1.8$). Participants were recruited through local autism support groups, special education schools, and community notice boards. Inclusion criteria required a formal diagnosis of ASD and the ability to participate in basic art activities with guidance. The participant group consisted of 12

males and 6 females, representing the typical gender distribution observed in ASD diagnoses. Prior to inclusion, informed consent was obtained from all parents/guardians, and the study received ethical approval from the Universiti Teknologi MARA Research Ethics Committee (approval number: UITM/REC/2023-12).

## 3.4 Data Collection Instruments

Pre- and post-program questionnaires were developed to assess parents'/caregivers' observations of their children's abilities across multiple domains. The questionnaire consisted of 20 items covering the following areas:

1. Interest in art activities (3 items)
2. Cognitive abilities including color and shape recognition (4 items)
3. Attention span and task completion (3 items)
4. Acquisition of new skills (2 items)
5. Emotional regulation (3 items)
6. Social interaction and communication (5 items)

Each item was rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire was validated through expert review by three specialists in special education and psychology, with content validity assessed using the Content Validity Index (CVI = 0.86). Reliability testing using Cronbach's alpha indicated good internal consistency ($\alpha = 0.84$).

## 3.5 Data Analysis

Quantitative data from the questionnaires were analysed using IBM SPSS Statistics 26. Descriptive statistics (means, standard deviations, and percentages) were calculated to summarize participant characteristics and questionnaire responses. Paired t-tests were conducted to compare pre- and post-program scores across all domains, with statistical significance set at $p < 0.05$. Additionally, Cohen's d was calculated to determine the effect size of the observed changes. For items with non-normal distribution, Wilcoxon signed-rank tests were employed as a non-parametric alternative. Qualitative feedback provided by parents in open-ended questions was analysed using thematic analysis to identify recurring patterns and insights regarding program impact.

# 4 RESULT

The quantitative analysis of pre- and post-program questionnaires revealed significant improvements across all evaluated domains, as presented in Table 1.

**Table 1** The Aspects Evaluated During Pre-Program and Post-Program of The 'ART'UISM: Artistic-Intuition-Autism Program'

| Aspect Evaluated | Pre-Program | Post-Program | Positive Impact | Pre-Program Mean (SD) | Post-Program Mean (SD) | Mean Difference | t-value | p-value | Cohen's d |
|---|---|---|---|---|---|---|---|---|---|
| Interest in Art Activities | 72% | 94% | Increased interest in art activities | 3.61 (0.84) | 4.72 (0.46) | 1.11 | 5.98 | <0.001 | 1.41 |
| Colour Recognition | 39% | 83% | Improved understanding of colours | 1.94 (0.87) | 4.17 (0.71) | 2.23 | 9.13 | <0.001 | 2.15 |
| Shape Identification | 44% | 83% | Better shape recognition skills | 2.22 (0.94) | 4.17 (0.62) | 1.95 | 8.26 | <0.001 | 1.95 |
| Attention Span and Task Completion | 28% | 78% | Longer attention span and ability to complete tasks | 1.39 (0.85) | 3.89 (0.76) | 2.50 | 10.42 | <0.001 | 2.46 |
| Learning New Skills | - | 89% | Developed new artistic skills and techniques | - | 4.44 (0.62) | - | - | - | - |
| Confidence and Self-Expression | 33% | 72% | Increased confidence and willingness to share ideas | 1.67 (0.77) | 3.61 (0.70) | 1.94 | 8.87 | <0.001 | 2.09 |
| Emotional Regulation | 22% | 67% | Better emotional control and reduced sensitivity | 1.11 (0.68) | 3.33 (0.84) | 2.22 | 9.73 | <0.001 | 2.29 |
| Social Interaction | 39% | 67% | Improved social skills and interaction with others | 1.94 (0.80) | 3.33 (0.77) | 1.39 | 6.18 | <0.001 | 1.46 |

*Statistically significant at $p < 0.05$*

The results indicate statistically significant improvements across all measured domains. The largest effects were observed in attention span and task completion (d = 2.46), emotional regulation (d = 2.29), and colour recognition (d = 2.15), all representing very large effect sizes. These findings align with previous research by Hassan et al. (2024a) that identified the importance of visual-spatial approaches in supporting affective development for children with ASD. The percentage of participants showing improvement in each domain is presented in Figure 1.

To provide more detailed insights, Table 2 presents sample questions from the pre-and post-program questionnaires along with the statistical analysis of responses.

**Table 2** Statistical Analysis of Specific Pre-Post Program Questions

| Pre-Program Question | Post-Program Question | Positive Result | Pre-Program Mean (SD) | Post-Program Mean (SD) | t-value | p-value | Improvement Percentage |
|---|---|---|---|---|---|---|---|
| Does your child like colouring? | Did your child gain understanding about colour concepts after participating in this program? | 83% reported improved colour recognition | 2.11 (0.90) | 4.17 (0.71) | 8.76 | <0.001 | 83% |
| Can your child identify shapes (circle, square, etc.)? | Does your child have a better understanding of shapes after the painting/colouring activity? | 83% reported better shape identification | 2.28 (0.96) | 4.17 (0.62) | 7.94 | <0.001 | 83% |
| Can your child sit still for a relatively long period (30 minutes)? | Could your child maintain focus for a longer duration compared to before? | 78% showed improved attention span and task completion | 1.39 (0.78) | 3.89 (0.76) | 9.88 | <0.001 | 78% |
| - | Did your child successfully learn new skills during the program? | 89% exhibited progress in learning new artistic techniques | - | 4.44 (0.62) | - | - | 89% |
| Is your child brave enough to try new things? | Has your child's confidence in trying new things increased after this program? | 72% showed increased confidence and willingness to share ideas | 1.67 (0.69) | 3.61 (0.70) | 8.52 | <0.001 | 72% |
| Can your child control their emotions well? | Is your child less sensitive and less easily discouraged if they fail compared to before? | 67% displayed better emotional regulation | 1.11 (0.58) | 3.33 (0.84) | 9.67 | <0.001 | 67% |
| Is your child friendly with people they have just met? | Is your child more comfortable and friendly with people they have just met? | 61% demonstrated improved social interaction skills | 1.94 (0.73) | 3.06 (0.80) | 4.95 | <0.001 | 61% |

*Statistically significant at $p < 0.05$*

Thematic analysis of qualitative feedback from parents revealed four major themes:

1. Enhanced communication: Parents reported that their children were using art to express emotions they previously struggled to verbalize.
2. Improved home behaviour: Many parents noted decreased frustration and improved compliance with routines at home following program participation.
3. Social connection: Parents observed increased willingness to interact with peers during and after the program.
4. Community acceptance: Several parents mentioned feeling more comfortable bringing their children to public spaces after experiencing the supportive program environment.

# 5 DISCUSSION

The involvement in art activities for children with autism provides valuable insights into diverse approaches that support development and communication. The significant improvements observed

across all measured domains suggest that the 'ART'UISM' program offers effective strategies for enhancing various skills in children with autism.

The substantial improvements in colour recognition (83%) and shape identification (83%) indicate that art-based activities can effectively develop cognitive and visual processing skills in children with autism. These findings align with previous research by Kellman (2001) and Schweizer et al. (2014), who demonstrated that artistic interventions can enhance visual-spatial skills and cognitive processing. This is further supported by Hassan et al. (2023), who found that well-designed visual teaching tools with appropriate colour selections and materials can significantly impact learning outcomes for children with ASD. The structured approach to colour and shape exploration through artistic mediums appears to provide an engaging context for learning these concepts, supporting the development of fundamental cognitive skills that may transfer to other areas of learning.

The notable improvement in attention span and task completion (78%) represents one of the most clinically significant findings of this study. Children with autism often struggle with sustained attention, particularly in non-preferred activities (American Psychiatric Association, 2013). The capacity of art activities to capture and maintain attention demonstrates their potential as both educational and therapeutic tools. This finding extends previous work by Emery (2004), who noted improvements in concentration during art therapy sessions but did not quantify these changes as comprehensively. These results also complement research by Hassan et al. (2024a) that identified the relationship between visual-spatial abilities and cognitive functions like attention and executive functioning in children with ASD, suggesting that visual art activities may leverage inherent cognitive strengths in this population.

Perhaps most striking is that 89% of participants exhibited progress in learning new artistic techniques, suggesting that the program's approach offers an effective method for skill acquisition. This high success rate indicates that when children with autism are provided with structured, supportive environments that accommodate their unique sensory and cognitive profiles, they demonstrate significant capacity for learning and adaptation. This counters deficit-focused narratives and highlights the importance of appropriate educational environments, as emphasized by Humphrey and Lewis (2008).

The improvements in emotional regulation (67%) and social interaction (61%), while statistically significant, were less pronounced than cognitive gains. This pattern suggests that while art activities can positively influence emotional and social functioning, these domains may require more extended intervention or additional targeted strategies. Nevertheless, the observed improvements are meaningful given the centrality of these challenges in autism and align with Epp's (2008) findings regarding art therapy's impact on emotional expression. Zulkefli and Rabi (2018) have similarly noted that social behaviour and communication are interrelated challenges for children with autism that often require multimodal approaches. The integration of technology with art-based methods may offer additional support in these domains, as suggested by Zulkefli and Rabi (2021).

It is important to acknowledge several limitations of this study. The relatively small sample size (n=18) limits generalizability, and the short duration of the program may not reveal potential longer-term benefits or challenges in skill maintenance. Additionally, the absence of a control group makes it difficult to distinguish program-specific effects from those that might result from any structured intervention or from developmental changes. The reliance on parent reports, while valuable for capturing real-world functioning, introduces potential reporting bias and would ideally be complemented by direct observational measures in future studies.

Despite these limitations, the consistent pattern of improvement across multiple domains and the statistical significance of the changes observed suggest that the 'ART'UISM' program offers a promising approach for supporting development in children with autism. The community-based nature of the program further addresses the critical need for accessible interventions outside traditional clinical settings.

# 6 CONCLUSION

The 'ART'UISM: Artistic-Intuition-Autism Program' demonstrates significant potential for enhancing multiple developmental domains in children with autism while fostering community acceptance. The program aligns with Sustainable Development Goal (SDG) 4, which aims to promote inclusive quality education and lifelong learning opportunities for vulnerable populations, including children with disabilities.

The significant improvements observed in colour and shape recognition, attention span, task completion, skill acquisition, confidence, emotional regulation, and social interaction highlight the multifaceted benefits of structured art therapy approaches for children with autism. These benefits extend beyond the individual child to impact family dynamics and community perceptions positively.

Several key implications emerge from this research:

1. Educational practice: The findings suggest that art-based interventions should be more systematically integrated into educational programs for children with autism, given their effectiveness in supporting multiple developmental domains simultaneously. This aligns with Hassan et al.'s (2024) recommendation for a more integrated approach to supporting children with autism through visual-spatial modalities.
2. Program design: Future programs should consider extending the duration and frequency of art interventions to potentially enhance emotional and social outcomes, which showed more modest improvements than cognitive domains. As suggested by Hassan et al. (2023), careful consideration of sensory modalities and materials can further enhance the effectiveness of these interventions.
3. Community inclusion: The positive reception of the program by the community demonstrates that art-based public events can serve as effective vehicles for increasing autism awareness and acceptance, creating more inclusive social environments. This supports findings by Hassan et al. (2024) regarding the importance of building inclusive communities through increased awareness and integrated support systems.
4. Research directions: Further research should employ larger sample sizes, control groups, and longitudinal designs to assess the durability of gains and examine potential developmental trajectories influenced by art therapy interventions. Additionally, exploring the potential integration of technology with art-based approaches may enhance communication outcomes, as suggested by Zulkefli and Rabi (2021).

For practitioners working with children with autism, this study underscores the value of creative approaches that engage children's strengths and interests while addressing developmental needs. Art-based interventions offer an accessible, non-stigmatizing approach that can be implemented in various settings, from clinical environments to community spaces.

In conclusion, the 'ART'UISM' program represents a promising model for supporting children with autism through art therapy while simultaneously promoting community understanding and acceptance. By bridging therapeutic intervention with community engagement, such programs can contribute to more inclusive societies that recognize and nurture the potential of all children, regardless of neurodevelopmental differences.

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## CONFLICT OF INTEREST

The author declares no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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