Designing Children's Artwork Performance Model for Primary School Environment in Malaysia

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ABSTRACT

In Malaysia, many parents encourage thier children to pursue science stream rather than art. They perceive that those who study science holds a brighter future in securing a well paying job. Arts has always been a marginalised subject taught in school to be creative. Unfortunately, creativity is not applied to how they think. Children's artwork performance in general affects their cognitive, pscyhological, behavioral and social development. The aim of this research is to understand children's perspective towards art and art-making. Here, the main objective is to identify the best model to represent the contributing factors that influence artwork performance among school children at Malaysian primary school. Data was collected using a survey questionnaire. Utilizing a convenience sampling method, 110 students from SK Taman Bukit Indah, Johor Baharu were chosen. Multiple linear regression technique was the analysis adapted in order to achieve the research objective. This research is significant towards identifing the most significant factors which influence children's participation in art-making. In the near future, the research will be extended to the secondary school children in Malaysia, and fair comparisons will be made within different streams.

Keywords: *Children Art; Artworks; Artwork Performance Model; Children's Participation; Malaysian Primary School Children*

INTRODUCTION

The six years of primary school is a critical period in children's development as a whole. At this stage, children the age of 7 to 12 need a variety of learning experiences in a quality school environment for further development (Field et al., 2013). Throughout these early years of life, children observe and investigate scientific measurements of their reality through play. This play learning experience can be explored through social interaction and activity relationships at school. An authentic curriculum (Hayon Park, 2018) can provide guidance to educators on how to interact and work with children in schools. These guidelines provide endless opportunities for children with learning and being creative. Planned activities should be appropriately creative, to the level in which the learning environment is rich, fun and challenging for the development of children (Ozar, 2012). As stated in the new Malaysian Education Blueprint 2013-2025, creativity fosters innovation. Although STEM may very well develop technologies, art is will contrive them first (Roy. D, 2019). Arts is key for creativity. Art-making allows children the opportunity to explore opportunities rather than confrm probabilities (Roy. D, 2019). Artwork enables youngsters to comprehend their reality outside of school and encourages them develop a strong establishment for achievement in school.

The construction of this paper can be divided into six sections. Section 1 is the introduction part. Section 2 comprises of the related literature to this research. Section 3 regards to data background. Section 4 is pertaining research framework. Section 5 is on the methodology adapted in this research. Section 6 is all about the results and discussions. Section 7 is the final part and closure of the paper, which comprises of the conclusion as well as recommendations for enhancement and future work.

LITERATURE REVIEW

Children demonstrate a characteristic of enthusiasm and happiness regarding arts and science. Prior to formal education, children investigate and utilize science through play (Caiman, C., Jakobson, B, 2019). Their scientific learning can be very unpredictable but yet, refined (Seo et al., 2004). During this stage, children are active and hands-on learners. However, they have short attention spans, cannot sit still for long periods of time, and learn best through hands-on exploration and manipulation of materials from the world around them (Wood, 2007, Wexler, 2004). They are social, talkative, and possess a narrative impulse runs through many of their activities, from drawing to imaginary play

In play, their day to day exercises, children regularly investigate scientific thoughts and procedures. For instance, they sort and order objects and things, look, evaluate and count at amounts of objects as well as notice shapes and examples (Baroody, 2004; Clements et al., 1999; Fuson, 2004; Gelman, 1994; Ginsburg et al., 1998; Piaget & Inhelder, 1967; Steffe, 2004). However, Malaysian school curriculums are geared towards focusing on Science, Technology, Engineering and Mathematics (STEM) (Adnan, 2017). It is believed that these subjects which pivots on the end product or learning objective is enough for children's education. Play is very much frowned upon as it is not learning. Strategies towards children performance in art and play is needed to expand the curriculum. Art-making through play affords imagination, curiousity and creativity.

In line with UNICEF's article 31, children avows the right to play, leisure and participate in artistic cultural art and science activities. Play is principally very important to children (Piaget, 2007), which is both a right and need (Nor Fadzila and Ismail, 2012). Through discovery, as a child's right to play (Almon, 2003), children will develop the mental processes as a way of learning. Play stimulate and advocates children the opportunity to be creative (Malone and Tranter, 2003). Play affords physical contact of the environment and social interaction (Kellert, 2002; Olds. 1989). Through play, children learn more of their environment and harness their gross and fine motor skills as well as their abilities through exploring, discovering, doing, succeeding and failing (Holloway and Pimlott-Wilson, 2014; Moore and Young, 1978; Medrich and Benson, 1976; Benjamin, 1974; Opie, 1969).

Art and science enables kids to understand the social universes around them (Caiman, C., Jakobson, B, 2019). Children are normally disposed to utilizing artworks in an imaginative and logical thought. By profiting such minutes, and via precisely arranging an assortment of encounters in view of scientific thoughts, instructors can develop and broaden kids' art sense, intrigue and curiosity. Since youthful children encounter on a very basic level shape their state of mind toward science, a drawing in and empowering atmosphere for childrens' initial experiences with artwork is essential (National Council of Teachers, 2000). Artistic development, as one thread of human development, is a cumulative, culturally inflected, complex "layering" that represents life's experiences and understandings (Burton, 2004, 2005). These artistic development in children are neither linear, universal, nor age-determined unfolding of intrinsic traits (Burton, 2000, 2005; Kindler, 1999, 2004). Younger middle childhood children learn well from modeling, and need chances to practice new behavior (Wood, 2007). Learning experiences need to be simultaneously structured and exploratory (Wexler, 2004), providing opportunities for open-ended exploration with materials and ideas that fit within a classroom routine that has a defined beginning and end. Students of this age are very enthusiastic and eager to learn, but are generally more interested in process than product. By the later stages of early childhood, students' fine motor coordination has begun to develop somewhat, but in general this stage is primarily concerned

with the development of gross motor abilities, and precise movements or fine detail are not in the range of students' interests or abilities

Children of this age level actively play and explore, and learn best by moving large muscle groups (Wood, 2007). Hands-on materials that includes crayons, markers, and other drawing implements, paint, clay, and blocks and other manipulatives are best suited for exploration in their art education.

Older children on the other hand have increasingly more refined motor coordination. They are more able to engage in delicate work with a wider range of tools, or revisit earlier processes with greater sophistication (Beal, 2001). Children are restless and still need physical activity, though their attention spans are longer than those of their younger peers (Wood, 2007).

These older children have an ever-expanding understanding of themselves in relation to the world more broadly, and are eager to explore the world and its systems. They are intellectually curious and industrious, and are interested in varieties of new arenas of knowledge, or facts and skills (Wood, 2007). They are able to consider more abstract concepts than their younger peers, and are more readily able to consider the world from another's point of view.

During this stage, friendships are increasingly important. Children form their self-identity, becoming more individualistic and socially independent. Their social standing and status as part of a group of friends is an important component of this. This increased social interest makes children more able to participate in group projects than their younger peers.

Conversely, it is indispensable for children to create trust in their capacity to comprehend and utilize artwork at the end of the day, to consider science to be inside their compass. Furthermore, positive encounters with utilizing artwork to take care of issues help children to create auras, for example, interest, creative energy, adaptability, imagination, and steadiness that add to their future accomplishment all through school (Clements & Conference Working Group, 2004). Though qualitative descriptions are needed of students' thinking and pedagogical practices in art classes (Burton, 2000; Eisner, 2002; Hafeli, Stockroki, & Zimmerman, 2005).

As older childhood children develop friendship, peers and buddies, their art making activities become primarily a social activity (Pearson, 2001). In addition, art making to these children have become active and kinesthetic. Children often "think out loud" as they work (Thompson, 1995), and are eager to re-tell the story of a drawing to anyone who would like to hear. There is a very close relationship between language arts and visual arts at this age (Olson, 2003).

At this stage, art making is less of a tool of communication than it is for younger students. As students get older, they typically rely less on visual communication and more on verbal abilities to express their ideas and understandings of the world around them (Edens and Potter, 2001). Largely is because not many of them believe they have the skills and talent to create refined art. The art of older middle childhood children still provides a number of insights into their overall development, however. In terms of drawing development, this stage is sometimes referred to as the "gang age," (Lowenfeld, 1987) as children of this age typically create drawings of groups of friends, reflecting their growing social interests and the importance of friends, peers and buddies.

Perceiving and expanding on childrens' individual encounters and information are fundamental to compelling early youth science training (Seo & Ginsburg, 2004; Clements et al., 1999; Copple, 2004; Geary, 1994). While striking similitudes are clear in the art issues that premium offspring of various foundations (Ginsburg et al., 2001) it is likewise obvious that childrens have changing social, semantic, home, and group encounters on which to manufacture artwork learning (Natriello et al., 1990; Han & Ginsburg, 2001). To accomplish value and instructive viability, teachers must know as much as they can about such contrasts and work to manufacture connects between kids' fluctuating encounters and new learning (Berk & Winsler, 1995; Heath, 1983; Vygotsky, 1986; Razel & Eylon, 1990). In artwork,

as in any information space, students advantage from having an assortment of approaches to comprehend a given idea (Kilpatrick et al., 2001; Bowman et al., 2001).

Expanding on kids' individual qualities and learning styles makes artworks educational modules and guideline more powerful. For instance, a few kids learn particularly well when instructional materials and methodologies utilize geometry to pass on number ideas (Razel & Eylon, 1990). Childrens' certainty, skill, and enthusiasm for art prosper when new encounters are significant and associated with their earlier information and experience (National Council of Teachers, 2000; Bredekamp & Rosegrant, 1995). However, their time of attention and concentration can be different; short or long. This depends very much to the activity and dynamic of instruction.

To start with, childrens' comprehension of an art idea is just instinctive. It can be from their pastime activities. games they enjoy playing, friends, family, and memorable event as well as meaningful memories. Thier observation to their enviornment can also spark an art idea. However, absence of an express ideas once in a while keeps the kid from making full utilization of earlier information and interfacing it to class artwork. In this way, instructors need to discover what enables childrens to start and initiate them to realize these things artificially. How can instructors constantly inspire children? What motivates them? And how dynamic can the engagement between the instructor and children bet to prompt them to be inspired?

DATA BACKGROUND

Based on the respondents' demographic data, pilot studies have been conducted on 20 students from standard 6 covering all gender and race. This study has resulted in a legitimate research instrument and has reasonable reliability.

The actual data of this study was obtained from 110 students covering different gender, age and race. In particular, quantitative research data is obtained from SK Taman Bukit Indah, Johor Baharu which include understanding of art, student's preference and complexity act as mediating variable for this study. Upon more information on the questionnaire, kindly contact the main author since this is regards to confidentiality and copyright matters.

Data were obtained from the survey conducted through workshop. A convenience sampling method was applied receiving responses through the field work survey. IBM SPSS version 23.0 was used and run for the purpose of model building and analysis. The analyses used in this study is multiple linear regression.

RESEARCH FRAMEWORK

Artwork in Malaysia uses child-friendly environment curriculum for children aged 7 to 12 years. This curriculum contains 4 areas of study which include:

a) The development of student's artwork (Artwork)
b) Development of student's understanding (Understanding)
c) Student's preference development (Preference)
d) The development of the Complexity and complexity of the world environment (Complexity)

Table 1 represents the variables used in this research as well as the explanations of each variable, and Figure 1 illustrates the theoretical framework of this research in order to achieve the main objective.

Table 1: The Variables Used in This Research

No.	Variable(s)	Parameters	Notation	Type
1.	Dependent	MeanArtwork	Mean Score of student's artwork	Continuous
2.	Independent	Meanunderstanding	Mean Score of Development of student's understanding variables	Continuous
3.	Independent	Meanpreference	Mean Score of Student's preference development variables	Continuous
4.	Independent	Meancomplexity	Mean Score of development of the Complexity and complexity of the world environment variable	Continuous

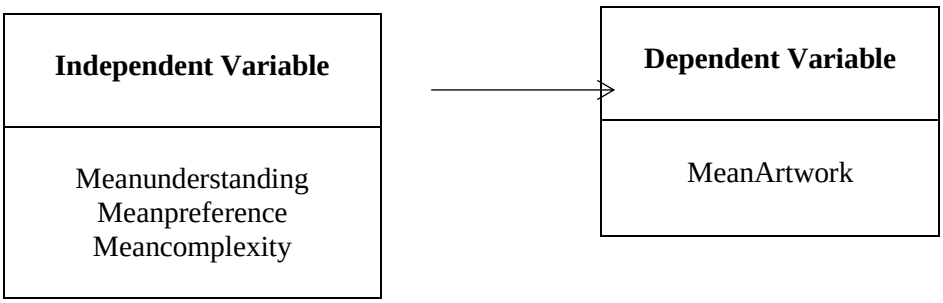

Figure 1: Theoretical Framework

METHODOLOGY

In this research, we adapted multiple linear regression, stepwise method. Several models will be developed and the best model will be selected eventually.

A linear regression model that contains more than one predictor variable is called a multiple linear regression model. The following model is a multiple linear regression model with five predictor variables, x_1, x_2, x_3, x_4 and x_5.

$$Y = \beta_o + \beta_1 * x_1 + \beta_2 * x_2 + \beta_3 * x_3 + \varepsilon \quad (1)$$

The model is linear because it is linear in the parameters β_0, β_1, β_2 and β_3. The parameter β_0 is the intercept of this plane. Parameters β_1, β_2 and β_3 are referred to as partial regression coefficients. In this research, the general model is

$$MeanArtwork = \beta_0 + \beta_1 * MeanUnderstanding + \beta_2 * MeanPreference + \beta_3 * MeanComplexity + \varepsilon \quad (2)$$

The final model will include only the significant predictors to explain MeanArtwork.

RESULTS AND DISCUSSIONS

This section explains the overall results. Based on stepwise method, there are three significant model that explain the dependent variable, Meanartwork. Based on Table 2, the best model is the third model with adjusted R-squared value 0.875 (p-value= 0.022), compared to the other models 0.866 (p-value=0.000) and 0.832 (p-value=0.000). This means that the predictors MeanUnderstanding, MeanPreference and MeanComplexity explain 87.5 percent of the dependent variable, MeanArtwork.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.914[a]	.835	.832	.30004	.835	307.645	1	61	.000	
2	.933[b]	.870	.866	.26767	.036	16.645	1	60	.000	
3	.939[c]	.881	.875	.25818	.011	5.492	1	59	.022	1.730

a. Predictors: (Constant), MeanUnderstanding
b. Predictors: (Constant), MeanUnderstanding, MeanPreference
c. Predictors: (Constant), MeanUnderstanding, MeanPreference, MeanComplexity
d. Dependent Variable: MeanArtwork

Based on Table 3 which represents analysis of varince (ANOVA), all three models are significant where the p-values are less than significant value α=0.05.

Table 3: ANOVA Summary

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.696	1	27.696	307.645	.000[b]
	Residual	5.492	108	.090		
	Total	33.187	109			
2	Regression	28.889	2	14.444	201.597	.000[c]
	Residual	4.299	107	.072		
	Total	33.187	109			
3	Regression	29.255	3	9.752	146.289	.000[d]
	Residual	3.933	106	.067		
	Total	33.187	109			

a. Dependent Variable: MeanArtwork
b. Predictors: (Constant), MeanUnderstanding
c. Predictors: (Constant), MeanUnderstanding, MeanPreference
d. Predictors: (Constant), MeanUnderstanding, MeanPreference, MeanComplexity

Therefore, the three significant model are reliable to explain MeanArtwork. Based on Table 3, the first estimated model is

$$MeanArtwork = \beta_0 + \beta_1 * MeanUnderstanding + \varepsilon$$

$$MeanArtwork = -0.083 + \beta_1 * 1.027$$

The second estimated model is

$$MeanArtwork = \beta_0 + \beta_1 * MeanUnderstanding + \beta_2 * MeanPreference + \varepsilon$$

$$MeanArtwork = -0.080 + 0.566 * MeanUnderstanding + 0.488 * MeanPreference$$

and the third estimated model is

$$MeanArtwork = \beta_0 + \beta_1 * Meanunderstanding + \beta_2 * MeanPreference + \beta_3 * MeanComplexity + \varepsilon$$

$$MeanArtwork = -0.119 + 0.462 * MeanUnderstanding + 0.331 * MeanPreference + 0.276 * MeanComplexity$$

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.083	.120		-.693	.491
	MeanUnderstanding	1.027	.059	.914	17.540	.000
2	(Constant)	-.080	.107		-.745	.459
	MeanUnderstanding	.566	.125	.503	4.545	.000
	MeanPreference	.488	.120	.452	4.080	.000
3	(Constant)	-.119	.105		-1.139	.259
	MeanUnderstanding	.462	.128	.411	3.613	.001
	MeanPreference	.331	.134	.306	2.472	.016
	MeanComplexity	.276	.118	.255	2.343	.022

a. Dependent Variable: MeanArtwork

Table 4 shows the excluded variables from each significant variable.

Table 5 shows the residual statistics for the best model which is the third model. Based on Figure 2, the distribution of the regression standardized residual is normal, as shown by the bell curve of the histogram. The result can be strengthten by the normal P-P plot in Figure 3 where the residuals fall almost on the straight line, and the residuals are also nicely scattered based on the scatter plot in Figure 4

Table 5: Residual Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.9494	2.9534	1.9167	.68691	110
Residual	-.71772	.52612	.00000	.25186	110
Std. Predicted Value	-1.408	1.509	.000	1.000	110
Std. Residual	-2.780	2.038	.000	.976	110

a. Dependent Variable: MeanArtwork

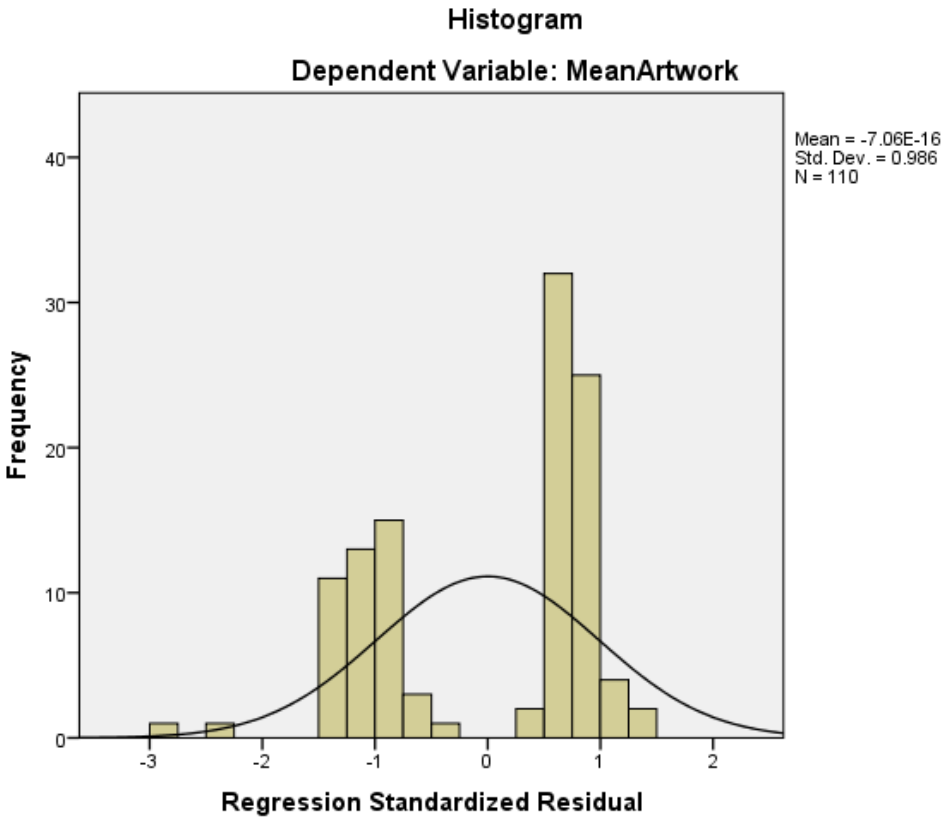

Figure 2. Distribution Regression Standardized Residuals

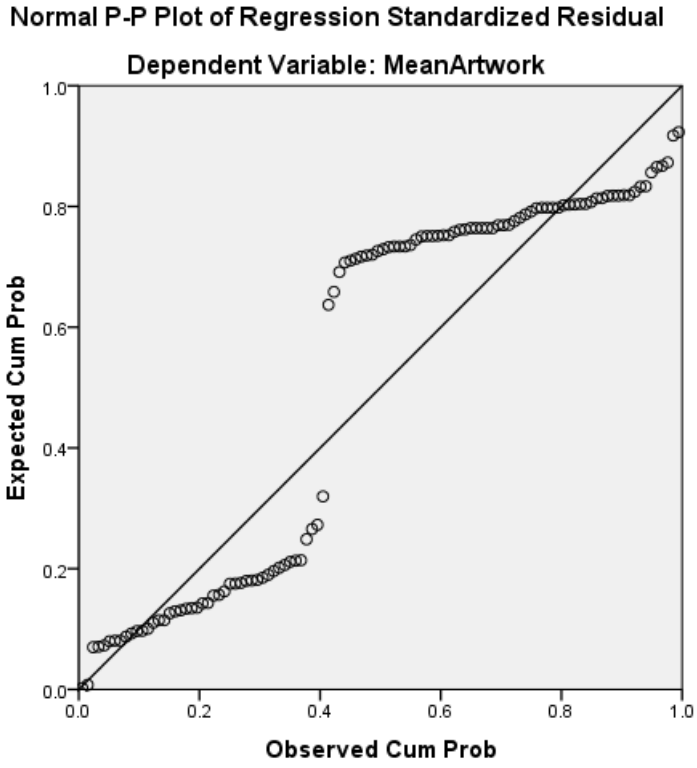

Figure 3. Normal P-P Plot

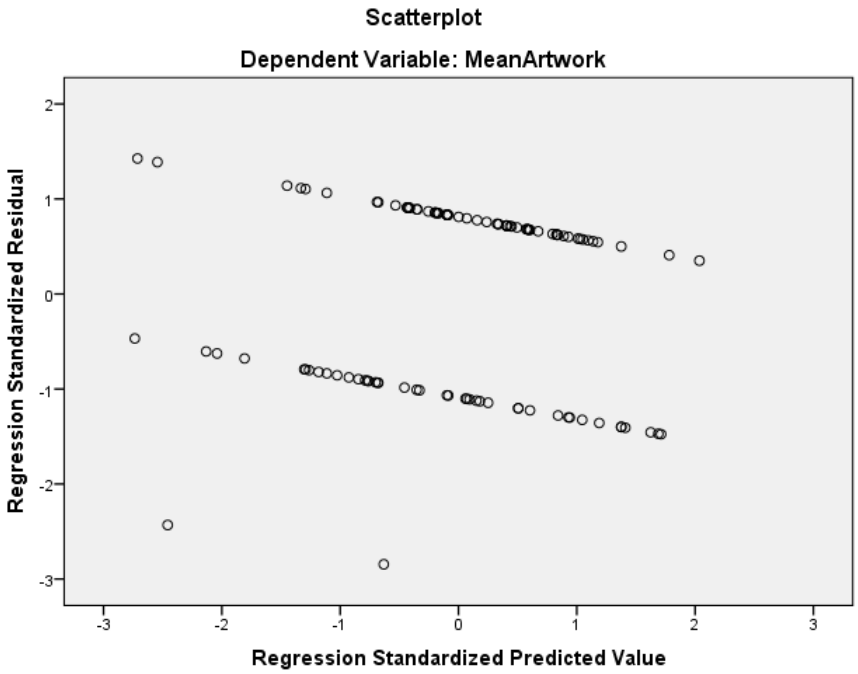

Figure 4. Scatterplot

CONCLUSIONS

As a conclusion, we can say that the objective is successfully achived. In order to ensure well development of child-friendly environement in artworks among children age on 11 to 12 years old, curriculum should focus on these three attibutes:

i. Art understanding Development variable
ii. Development of preference variable
iii. Development of the Complexity variable

Therefore a proper curriculum need to be revised at school level in order to ensure good reasoning and art skils for the children of the said age. For future work, the similar approaches shall be ventured to children age groups which are 7-10, 13-15 and 16-17 years old at Malaysian school.

The developed model is signifant towards identifying and measuring the quality of artwork and art achievement at school or any other educational centers around the world. Proper syllabus should be made by the related authorities with respected to the significant attributes in order to affirm good artworks development among children as soon as they are born.

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