To Study the Correlation between Color Choices and Objects Drawn Can Be Found In Pre-Primary Student

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Abstract: ***This paper contains a summary of the study in relation to the results presented in thesis. This paper begins with a discussion of the initial assumptions of the outcomes of the study. These assumptions were made prior to the conduction of the study and will be used in the explanation of the study's results. Conclusions of each phase and a comparison of phases will be established. The remaining sections of this chapter will include a discussion of possible limitations of the study and recommendations for the study and further research on this topic.***

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INITIAL ASSUMPTIONS

Prior to conducting the study, assumptions were established on the outcomes of logical colour choice in each phase of the study as well as logical colour choice within the four classifications of gender, age, academic ability, and socio - economic status. In relation to logical colour choices of student participants, it could be assumed that student outcomes would consist of expressive colour choices in all six object drawings. This assumption was established in accordance with Lowenfeld's (1987) artistic stages of development (as noted in Chapter II), where students at this age level produce art that is expressive and spontaneous. The increase of logical colour choice from each phase of the study was assumed to occur based on the increase of colour choice limitations in each phase. It was established that an increase in logical thinking would be used throughout the study as each phase was differentiated by colour choice amount, therefore resulting in a decrease of expressive colour usage and an increase of logical colour choice.

Assumptions about logical colour choice within the four classifications of gender, age, academic ability, and socio - economic status were also recognized. Based on classroom observations and experience prior to the conduct of the study, it was assumed that boys would be less expressive and girls more expressive in their colour choice throughout all three phases of the study, resulting in a higher logical colour score for boys.

Assumptions about age as it relates to logical colour were established in accordance with Lowenfeld's (1987) Preschematic Stage (classifying children's artistic tendencies from age four to age seven). Student participants with a younger chronological age were assumed to be more expressive in their colour choices as compared to older students. This assumption was established because of the younger student's classification in the Preschematic Stage (students between the ages of sixty months and sixty- seven months). Older students were presumed to be more logical in their colour choice due to their age (sixty-eight months and older) which would classify them, according to Lowenfeld (1987), as exiting the Preschematic Stage.

It was assumed that academic ability would be a predictor of logical colour choice due to academic assessments consisting of logical thinking which group students as Above Grade Level, On Grade Level, and Below Grade Level. Therefore, students classified as Above Grade Level would perform with a higher logical colour score than those students classified as On Grade Level. Students classified as On Grade Level would produce a logical colour score higher than those students classified as Below Grade Level.

Lastly, in relation to socio-economic status and logical colour, it was assumed that students receiving the Free - Reduced Meals program because of their economic need would be less logical in their colour choice (more expressive) than those students not receiving this program (Pay students). This assumption was recognized because of low standardized test scores throughout the school where student participants attended. Prior to the study, students in testing grades (grades 3 and 5) who have

been classified as receiving Free- Reduced Meals program have attained lower performing test scores in logical reasoning of both reading and math indicators in comparison to those students not receiving this program (i.e., those considered as Pay students). Because of this state assessment result, it was assumed that students in this study receiving this program because of economic need would be more expressive and less logical in their colour choices than those students with higher economic status.

CONCLUSIONS

1. PHASE ONE

Logical Colour. Logical colour was used by 90% of students in the drawing of the tree. This score included one student participant who selected only the colour brown to represent a tree which consisted of leaf – less branches in the autumn season. The object drawing of the tree attained the highest logical colour score in comparison to the other objects in this phase. It should be noted that this phase of the study occurred in the month of November, where deciduous trees in this environment have mostly shed their leaves. However, the majority of students chose the colours green and brown in their representation.

This may be a result of a possible colour schema of objects in nature, where the prior knowledge of students creates strong associations in the representation of an object. The object drawing which attained the lowest logical colour score of 29% was the drawing of the house. Because houses appear in a variety of colours and students in this phase where not limited in their colour amount, students were more expressive with this object drawing in comparison to the other objects in this phase, utilizing a larger number of colours in their drawing. The remaining objects of the boy, dog, girl, and car obtained scores ranging between 37% and 44%, representative of the average total logical colour score for this phase (47%).

In reference to the four classifications of logical colour in Phase 1, certain assumptions associated with the sub-groups of gender, age, academic ability, and socio-economic status have been met. When examining the effect of gender on logical colour, girls attained a higher score (0.53) than that of boys (0.36). The assumption that girls would perform more expressive than boys was not met in this phase. In evaluating age as it relates to logical colour, there were no evident trends shown in logical colour score. The assumption that older age yields logical ability may not be an adequate predictor of logical colour usage, therefore resulting in the proposition that age does not predict ability. Logical colour scores in relation to academic ability showed that the assumption of Above Grade Level students attaining the highest logical colour score was not met. The On Grade Level group attained the highest score of 0.48. However, the Below Grade Level group did score the lowest with a logical colour score of 0.45. Logical colour scores in terms of socio - economic status showed the assumption that students receiving Free - Reduced meals program scored lower in logical colour usage in comparison to students who pay full meal coverage to be true. Pay students attained a score of 0.53 followed by Free - Reduced students scoring 0.42.

Colour Trends. In Phase 1, two groups of colour trends were evident in the object drawings of the tree and boy. In the drawing of the tree, the colours green and brown were most frequently chosen. Although this phase occurred during the autumn season, the majority of students (with the exception of one participant) used these colours in their representation. Students seemed to choose natural colours to represent a tree. However, these colours were not a realistic representation of some trees at the time when the study was conducted. The result of this finding may explain a possible colour schema in the representation of an object in nature. In the drawing of the boy, the colours brown and black were chosen most frequently in its representation. Because student participants were of the African American race, the ethnicity of the students may have resulted in the selection of these colours. The colours used in the remaining objects (house, dog, girl, car) showed no obvious colour trends.

2. PHASE TWO

Logical Colour. Logical colour was used by 94% of student participants in the object drawing of the tree. The use of expressive colours in the representation of the tree was not evident in this phase. As in Phase 1, the result of a high logical colour score for this object may be explained by addressing a possible colour association, or schema, with the colours green and brown in the representation of a tree. The object drawing which attained the lowest score of logical colour with 33% was the drawing of the house, similar to the finding in Phase 1. The expressive colour usage with this object may be a result of the variety of colours associated with a house. However, it should be noted that this phase posed a limitation as to the number of colours that can be chosen to represent each object. Students were asked to select two crayon colours for each drawing. This minimized the colour choices. However, it did not seem to limit the expressive colour selection of the students. Logical colour was used by 69% of students when representing the image of the boy. This score showed an increase of 32% in logical colour usage from the drawing of the boy in Phase 1. The remaining objects (dog, girl, car) all obtained a score of 53% which is

consistent with the total average logical colour score in Phase 2 (0.59).

The four classifications of gender, age, academic ability, and socio- economic status on logical colour choice in Phase 2 showed similar findings to Phase 1. In examining the effect of gender on logical colour, the assumption of boys attaining a higher logical colour score than girls was slightly true, with a score of 0.60 for boys and 0.59 for girls. However, it should be noted that there is only a difference of 0.1 between each group.

In investigating age as it relates to logical colour, there were not any obvious trends shown in logical colour score, creating supporting evidence that age is not a good predictor of logical thinking or academic ability. According to academic ability on logical colour, Below Grade Level students did not satisfy the assumption of attaining the lowest logical colour score. This group scored an average of 0.60. However, as in Phase 1, students in the On Grade Level group attained the highest logical colour score of 0.62, while students in the Above Grade Level group scored the lowest in this phase with 0.57. In terms of socio-economic status, the assumption that economic status has an effect on logical thinking has been satisfied in Phase 2 with Free - Reduced meals students attaining a lower score (0.56) when compared to Pay students (0.64).

Colour Trends. In Phase 2, as in Phase 1, colour trends were evident in the object drawing of the tree and the boy. Again as in Phase 1, the colours brown and green were chosen most frequently. However, because this phase asked students to choose only two colours to represent each object, it may have eliminated the possibility of using only the colour brown as a colour choice and increased the possibility of using the colour green. The selection of these colours may be the result of a possible colour association of green and brown with the representation of a tree. The colours brown and black, as in Phase 1, were used most frequently in the drawing of the boy, resulting in possible skin colour associations with the student participants' ethnicity. In addition to the object drawings of the tree and boy, there are notable colour trends in the drawings of the dog and car. In the object drawing of the dog, the colour brown was used frequently to represent this object, showing a possible colour association of the colour brown with the hair of a dog. The colour black was used frequently in the drawing of the car, providing evidence of a logical colour choice in the representation of its wheels. The colours purple, brown, and red were used most frequently in the drawing of the girl, providing a possible association with these colours to the image of a girl. However, there was no obvious colour trends in the drawing of the house, with all colours used consistently (with the exception of the colour green, which was selected by only one student). Because a house can be observed in a variety of colours, students' colour selection varied.

3. PHASE THREE

Logical Colour. In Phase 3, logical colour was used by 100% of student participants in the drawing of the tree. The use of expressive colours in the representation of the tree was not evident in this phase. As in Phase 1 and Phase 2, the result of a high logical colour score for this object may be explained by addressing a possible colour association, or schema, with the colours green and brown in the representation of a tree. It should be noted that, differing from the two previous phases, student in this phase were asked to select a pre-arranged group of colours to draw each object. The logical colour usage for this object may have increased due to the pre-arranged colour combination of green and brown.

The object drawing which attained the lowest score of logical colour choices with 39% was the drawing of the car. Because a car can be observed in a variety of colours, students may have chosen colour combinations to represent the body of a car and consequently overlooked the element of black to represent the tires. Logical colour was used by 89% of student participants in the drawing of the boy. There was a 20% increase of logical colour usage for this object from Phase 2. This may be the result of a possible association with realistic images of boys in the representation of this object. The remaining objects (house, dog, girl) obtained logical colour scores ranging from 44% to 56%, which were consistent with the total average logical colour score for Phase 3 (64%). With reference to the four classifications of logical colour in Phase 3, several assumptions associated with the sub-groups of gender, age, academic ability, and socio-economic status have been met. The assumption of boys scoring higher in logical colour usage as compared to girls has been satisfied with boys earning a score of 0.67 and girls scoring 0.62. In relation to age, there were no obvious trends in logical colour score, providing evidence, as in Phase 1 and Phase 2, that age is not a predictor of logical thinking or academic ability. When examining the effect of academic ability on logical colour, the Above Grade Level group received the highest logical colour score of 0.69, followed by the On Grade Level group with 0.67. The Below Grade Level group scored the lowest logical colour usage with 0.56. The assumption of academic ability as a predictor of logical colour choices was evident in this phase. It can be noted that because this phase asked students to select a pre-arranged group of colours, logical reasoning was heightened, therefore challenging students to utilize logical thinking skills. In terms of socio-economic status on logical colour, the assumption of Free - Reduced meals students attaining a lower logical colour score when compared to Pay students

was not satisfied in this phase. Free - Reduced meals students earned a score of 0.67, while Pay students scored 0.58. This finding may support the possibility that economic status of students is not a constant factor for logical thinking or ability.

Colour Trends. In Phase 3, as in Phase 1 and Phase 2, colour trends were evident in the object drawing of the tree and the boy. In this phase, the colours brown and green were chosen most frequently with 100% student participant selection. However, because this phase asked students to select a pre-arranged set of colours, the colour combination of green and brown may have reduced the expressive tendency to choose alternative colour combinations, increasing the probability of selecting the green/brown combination. This overwhelming colour choice may be explained as a result of a possible colour schema or the association of green and brown with the representation of a tree. In the drawing of the boy, the colours black and brown were chosen most frequently. As in the previous phases, the colour associations of black and brown with the image of a boy may be the result of realistically representing a boy in the ethnicity of the student population. There were no obvious colour trends in the drawings of the house, dog, girl, and car. All colour combinations were utilized in all drawings, with the exception of the house in which the colour combinations brown/black and green/brown were not selected by any student participant.

4. COMPARISON OF PHASES

Logical Colour. Throughout the three phases of the study, the average score of participants' logical colour usage was predicted to increase from phase to phase. It was also assumed that logical thinking in each phase would increase due to colour selection limitations. This would result in an increase in logical colour choice. In the examination of logical colour throughout the three phases of the study, the objects of the tree, house, boy, and girl met the assumptions of logical colour choice increase throughout the phases. Moreover, the object drawing of the boy and car showed an increase from Phase 1 to Phase 2. However, these objects decreased from Phase 2 to Phase 3. The selection of a group of colour combinations may have contributed to this decrease due to the more involved task of choosing colours that have been pre-arranged.

The four classifications of gender, age, academic ability, and socio-economic status on logical colour usage were compared throughout the three phases of the study. In the sub-group of gender, the logical colour score for boys increased dramatically, while girls were showed to have a steady increase. The logical colour scores for both groups increased in accordance with the assumption of an increase of logical colour throughout phases. When examining age throughout the phases of the study, there were no obvious trends as it relates to logical colour. This finding may be due to the basis that intellectual levels and logical thinking are not based on age, but rather on the ability of the students. Therefore, the logical thinking capability of students may be considered a prediction of logical colour choices. In relation to academic ability, the On Grade Level group attained the highest logical colour score in Phase 1 and Phase 2. Above Grade Level students' creativity in Phase 1 and Phase 2 may have reduced their logical thinking scores, which increased their expressive ability. Below Grade Level students' scores deceased in Phase 3 as a possible result of the heightened logical thinking colour selection task in that phase. Logical colour scores in Phase 3 correspond with the ability level of students, thus satisfying the assumption that academic ability is a predictor of logical thinking and consequently logical colour choice. The assumptions as to the socio-economic status of student participants in predicting the outcome of logical colour usage was met in both Phase 1 and Phase 2. However, in Phase 3, Pay students attained a lower logical colour score in comparison to Free - Reduced Meals students. Economic status did not prove to be a prediction of logical colour choice in Phase 3 of the study. Therefore, it may be explained that logical thinking which yields logical colour selection depends on the ability of the students rather than on socio - economic status.

Colour Trends. Throughout the study, colour trends within each phase have been evaluated according to the six object drawings. Prior to the study, it was assumed that all student participants because of age (which classified them in Lowenfeld's (1987) Preschematic Stage) would be expressive in their colour selection of all object drawings. However, there was a strong colour schema of the colours green and brown in the drawing of the tree. Because a child's memory begins at approximately 3 years of age, students in this study would have experienced the changing of leaves in the autumn season approximately three times. It should be noted that young children are active outside mostly in the summer months where leaves are the colour green and the bark of the tree is a constant colour brown. The students' selection of the colours green and brown to represent the image of the tree may be the result of a strong colour schema which associates the colours green and brown with the representation of a tree in its natural, mostly frequently observed setting. The colour trend of brown and black for the representation of the boy can be attributed to a possible skin colour association due to the ethnicity of student participants. It can be assumed that this colour trend would be evident in the drawing of the girl. However, the colours most frequently chosen throughout the phases to represent the

girl were red and purple. This colour trend may be a result of a symbolic colour association with the image of girls. These colours are popularized in girls' clothing and accessories, as well as toys and dolls designed to appeal to girls in today's society. Lastly, the object drawing of the car presents colour trends throughout Phase 1 and Phase 2 that do not culminate to the colour trends of Phase 3. In Phase 1, the colour red was chosen frequently in the object drawing of the car. This colour was used to distinguish the body of the car. In Phase 2, the colour black was used most frequently in representing the wheels of the car. However, in Phase 3, the colours red and black as a pre-arranged colour combination were not chosen most frequently, as was assumed to occur. This result may have occurred due to a variety of colour choices of the body of a car other than the colour red, which may have hindered the selection of red and black together. One such instance of colour association occurred in Phase 3 when a student shared her thought process aloud with the teacher/researcher.

This particular student explained that she chose the colour combination blue and orange because her dad drives a blue car and blue was not grouped with black, so she drew orange wheels instead. A logical thought process was evident in the selection of blue and orange to represent the car. This student explanation may support evidence that logical thinking contributes to logical colour choices.

LIMITATIONS OF THE STUDY

When interpreting the findings of this study, there are certain limitations that should be addressed. All participants in the study were of same elementary school located in an urban setting.

The homogenous background of the student participants may be considered a limitation to the study. Because this study was a form of action research, where research was conducted in the classroom of the teacher/researcher, it included all students within the class, consisting of a total of eighteen students. This small sample size should also be considered a limitation to the study. As an action research study, it should be noted that because the researcher is the classroom teacher, there is a familiarity to subjects, which may present a bias in the scoring of drawings.

The eight crayon colours (red, orange, yellow, green, blue, purple, brown, and black) although familiar to the students, may be considered a limitation in that they do not promote the logical use of colour in the skin tones of the boy and girl. Although the colour combinations in Phase 3 were selected as a result of the colours used in Phase 1 and Phase 2 by student participants, the selection of colour combinations may need further justification, as well as the inclusion of specific criteria in Phase 3 for classifying colours as logical.

RECOMMENDATIONS FOR THE STUDY

Because of the possible limitations to the study, it is necessary to present certain recommendations. This study should be replicated to include student participants from diverse ethnic backgrounds as well as from a variety of geographic locations. Moreover, replicating this study with a heterogeneous population may confirm or deny the findings of the study.

In order to prevent bias in this study, an outside individual to evaluate the drawings in addition to the teacher/researcher may minimize possible bias in the analysis and scoring of drawings. It can also be noted that conducting this study using a larger sample size would validate the findings.

Lastly, the use of a variety of colours representative of skin tones may increase the logical representation of the boy/girl images. The justification of the colour combinations used in Phase 3 as well as an additional statement of criteria to evaluate logical colour in this phase may contribute to the evaluation of the drawings, which may further support the findings of the study.

RECOMMENDATIONS FOR FURTHER RESEARCH

Further research on the topic of colour selection in young children is recommended in order to provide further documentation of the effect colour may have on children's representation of objects. It may be valuable to investigate colour usage of children in pre- drawn outlined images or objects. Moreover, symbolic colour associations that children may possess may also provide interesting findings on the influence of colour on children's drawings. Lastly, it is recommended that colour schemas in drawings of young children be further studied in order to examine the possibility of a pre-disposed association to colour.

FINAL DISCUSSION

Throughout this study, colour selection in the drawings of young children was investigated in order to explore possible relationships between colour and the developmental stages of young children. Developmental theories derived from Lowenfeld, Kellogg, and Piaget were used to present a model for interpretation of child drawings. Assumptions as to the outcomes of colour selection were established in accordance with these theories, and these initial assumptions were used to

hypothesize the outcomes of the study. As noted by Lowenfeld (1987), children in the age group consistent with this study would be expressive and spontaneous in the colours that they choose in their drawings. However, the results of this study presented a new finding on the colour selection that young children make. There are logical approaches to the selection and usage of colour in young children's drawings as well as possible colour trends used to represent familiar objects. The findings of this study may provide an insight into the nature of the present-day child, as opposed to the child of the past, as described by Lowenfeld, Kellogg, and Piaget. Because of an increase in testing and academic achievement in today's society (through national, state, and local educational goals), the nature of the child is changing. An interruption in the natural artistic development of the child may be occurring as a result of this change in society's goals. The child, once encouraged to freely express through art, may be hindered by society as expectations to perform are presented at an early age in the academic setting of a school. This change in the nature of today's child warrants further research on a larger scale of children's artistic development as it relates to colour selection in the drawings that children make.

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