

**Montessori Education as a New Method for Teaching Colors in Design Basics
(Case Study Foundation Level)**

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Abstract:Montessori is a method of education that is based on self-directed activity, hands-on learning and collaborative play. This method based on observations and evaluations of a student's development, which is a fundamental key of the Montessori Method.

Color is one of the fundamental elements of art. It is important for art students to not only be exposed to color theory, but to understand it. By studying colors, students are able to embrace their own creativity and create their own masterpieces; one of the introductory art lessons is that of mixing colors and understanding the color wheel.

The researcher chose this method to help beginning students grasp the concepts of color theory and color schemes to help them advance through the curriculum with new skills.

Hence the research problem is to use general rules and concepts of Montessori to achieve a new method of color education to reform student's knowledge, self-confidence, self-correction and their own abilities in using colors.

**المونتسوري طريقة جديدة لتدريس الألوان في أساسيات التصميم
(دراسة علي طلاب الفرقة الإعدادية)**

المخلص:

المونتيسوري أسلوب تعليم يقوم على النشاط الموجه ذاتياً، كما يعتمد على التعلم ومن خلال اللعب التعاوني. هذه الطريقة تعتمد أيضاً على الملاحظة وتقييم تطور الطالب كأساس لفكر المونتيسوري. واحد أهم عناصر الفن الأساسية اللون، وعلى طلاب الفنون أن يدرسوا اللون جيداً ليس فقط نظرياً، بل كمفهوم شامل لمعني اللون. ليكون لهم القدرة علي الإبداع والخلق والابتكار. ويعد دراسة خلط الألوان وعجلة الألوان أحد أهم مبادئ دراسة اللون.

وقد قامت هذه الدراسة على فكر المونتيسوري، كطريقة تساعد الطلاب المبتدئين (الفرقة الإعدادية) على ادراك مفاهيم نظرية اللون لمساعدتهم على التقدم من خلال قواعد منهجية بمهارات جديدة. وعليه فإن مشكلة البحث تتمركز في استخدام القواعد العامة ومفاهيم المونتيسوري للوصول لطريقة جديدة لتعلم اللون وزيادة معارف الطالب والثقة بالنفس والتصحيح الذاتي وتنمية قدراتهم الخاصة لاستخدام اللون.

Introduction:

In the early 1900's, Italian educator and physician Maria Montessori developed an innovative teaching methodology for children that left an indelible mark on educational curricula throughout the world. Chris Holfester, 2008.

She was the first woman began to study education with mentally retarded children using sensorial materials invented by the French educator Seguin. When the children under her tutelage passed the state examinations given to normal children, Montessori took up the challenge of determining why children in normal schools were not performing even better.

Her approach to education was to watch children in a carefully prepared environment, giving them freedom within the bounds of constructive behavior. By observing and reasoning about their responses to the environment, she developed a method of education that appeared to work with their natural tendencies. In this sense she is in the tradition of Rousseau, Pestalozzi, and her contemporary, John Dewey. Many of the principles she derived from studying normal children were later discovered in psychology and education research. Lillard, A. (2005).

The foundation for the values of perseverance at a task, persist in doing something until it is done correctly, and satisfaction at a job well done—all desirable qualities in the independent adult with a sense of high self-esteem. Maria Montessori, 2004.

Color is a powerful tool <http://thevirtualinstructor.com/blog/some-interesting-facts-about-color>, It is not only the professional artist or designer who deals with color. All of us make color decisions almost every day. We constantly choose items to purchase of which the color is a major factor. Unfortunately, the study of color can be rather complex. It has so many aspects that it means different things to a physicist, optician, psychiatrist, poet, lighting engineer, and painter; and the analysis of color becomes a multifaceted report in which many experts competently describe their findings. David A. Lauer, Stephen Pentak, 2012.

Many good artists and designers recognize its power and use it to manipulate to their benefit. <http://thevirtualinstructor.com/blog/some-interesting-facts-about-color>.

All fields in art are now increasingly concerned with color. Therefore, everyone can profit by knowing some basic color principles. David A. Lauer, Stephen Pentak, 2012. Color and color theory form the foundation of art as well as design to organize colors and show their relationship to each other. <http://www.mensaforkids.org/teach/lesson-plans/introduction-to-color/>.

So we will use general rules and concepts of Montessori to achieve a new method of color education to reform student's knowledge, self-confidence, self-correction and their own abilities in using colors.

Research problem:

- Use general rules and concepts of Montessori to achieve a new method of color education to reform student's knowledge.

- Teachers are the leaders and students are expected to follow them without think by themselves.

Research Aim:

- Is to take an advantage of the uses of the Montessori method in teaching colors for foundation level in arts and design faculties.

- Help beginning students to grasp the concepts of color theory and color schemes to help them advance through the curriculum with new skills.

Research Importance:

In this research we are trying to use the concept of Montessori as a new way of teaching colors in design basics for foundation level in the arts and design faculties, to achieve that student had self-confidence, self-correction and liberty to choose and act freely in using colors.

Research Hypotheses:

- The researcher assumes that using Montessori Education as a New Method for Teaching Colors can help in teaching Design Basics for foundation level in faculties in arts and design.
- Being a part of education can build up student's-confidence and their self-correction.

Research Methodology:

The research is based on an inductive approach and to a descriptive approach, analytical study for different designs done by foundation students.

Montessori Method:

Montessori programs have grown considerably over the past decades. There have been two major facets to this growth: expansion of private to public settings and extension from preschool into elementary, junior high school, and beyond.(Dohrman, K. R., 2003).

This method is a spontaneous, expansive educational system designed to afford the child liberty to move and act in a prepared environment encouraging self-development.(Shivakumara K, 1Dhiksha J, and 2Nagaraj, 2016).

Montessori identified three significant phases:

- 1- from birth to six years, the period of the absorbent mind, when the small child has no sense of right and wrong and lives outside of adults' moral prescriptions.
- 2- from six to twelve years, when children begin to be conscious of right and wrong in terms of their own and other's actions; a sense of moral consciousness is being formed, which leads to group and social values.
- 3- from twelve to eighteen, when the adolescent develops a love of country and a sense of national identity.(Maria Montessori edited by Gerald Lee Gutek, 2004).

Principles of Montessori Education:

There are several principles of Montessori Education we can mention some of them:

1. Movement and cognition are closely entwined, and movement can enhance thinking and learning.
2. Learning and well-being are improved when people have a sense of control over their lives.
3. People learn better when they are interested in what they are learning.
4. Tying extrinsic rewards to an activity, like money for reading or high grades for tests, negatively impacts motivation to engage in that activity when the reward is withdrawn.
5. Collaborative arrangements can be very conducive to learning.

6. Learning situated in meaningful contexts is often deeper and richer than learning in abstract contexts.
 7. Particular forms of adult interaction are associated with more optimal child outcomes.
 8. Order in the environment is beneficial to children.
- (Lillard, A.S. ,2007).

Montessori Theory:

Montessori education is fundamentally a model of human development, and an educational approach based on that model.

The model has two basic principles:

First: students and developing adults engage in psychological self-construction by means of interaction with their environments.

Second: students have an innate path of psychological development. Based on their observations. <http://www.kidablethailand.com/montessori-method/>.

Students are seen as inherently curious and learning driven. Thus, education is viewed as a process, which should occur in harmony with the student's individual developmental pace. It is a holistic approach emphasizing all aspects of development, rather than on attaining specific pieces of information. <https://www.learning-theories.com/montessori-method.html>.

So there are three stages of learning:

Stage1: Introduction to a concept by means of a lecture, lesson, something read in a book, etc.

Stage2: Processing the information, developing an understanding of the concept through work, experimentation, and creation.

Stage3: "Knowing", to possessing an understanding of, demonstrated by the ability to pass a test with confidence, to teach another, or to express with ease.

<http://www.rwmontessori.com/articles/elements-of-a-montessori-education/>.

Montessori Method VS traditional one:

Student motivation, or lack thereof, is a popular topic in discussions about the challenges of modern education. Teachers wonder how best to motivate students; parents wonder why their children are not motivated to do well in school; and the popular media laments a general trend toward student disengagement. Motivation is a crucial concept in education because it has been shown to influence interest, excitement, and confidence, which in turn enhance performance, persistence, creativity, and general well-being. (Ryan & Deci, 2000).

For Montessori, an overreliance on group instruction made the teacher act as a drill sergeant in that by her commands she tried to get all the children to all follow her orders as a unit. Montessori, in contrast, focused on the individual child, who by independent activities worked on her or his own task.(Maria Montessori, 2004).

The primary role of a Montessori educator is to create a cooperative and supportive setting that is organized and seems aesthetically pleasing to the learners. The teacher performs the observer role to direct, spontaneous actions of the students (Ruenzel,

1997). According to Montessori, education is not something, which the teacher does, but rather a natural process that develops spontaneously in the human being. (Weissglass, 1999). Maria Montessori's program is very different from most traditional schools. Montessori Method involves self-direction, cooperative and non-competitive activities to develop high self-esteem, strong self-image, and confidence to solve problem and make decisions.

In traditional classrooms the teacher has the active role, whereas the child has the passive role. Maria Montessori emphasized the importance of children taking an active role in their learning. She did not design the classroom around the teacher, but rather around the learner. (Weissglass, 1999) The children are able to move freely in the classroom, explore the prepared environment, and as the teacher as a guide. Montessori children learn to become independent, however, also get an experience in collaborative work with their peers. (Shivakumara K, 1Dhiksha J, and 2Nagaraj, O, 2016).

	Montessori	Traditional
1	No pre-determined curriculum; children choose the materials suitable to their developmental stage.	Teachers work to a set curriculum.
2	Children are free to explore and discover on their own.	Teachers enforce a lesson plan that is followed every day.
3	Emphasis on the concrete.	Emphasis on the abstract.
4	The learning environment is child-centered.	The teacher is the center of attention.
5	Children provide their own stimulation and motivation to learn.	Teacher provides the stimulation and drives the learning process.
6	Montessori materials are designed to promote self-education and self-correction.	Teachers use reward and punishment as a means to motivate education.
7	Montessori designed multi-sensory materials develop specific skills.	Play materials are for non-specific skills.
8	Children may talk freely, provided they don't disturb the others.	Children have to keep quiet unless called upon to answer questions or invited to ask questions.
9	Teachers are guides only, encouraging children to act and think for themselves.	The teacher is the leader and children are expected to follow.

Table (1)
Comparison Between Montessori & Traditional Education

Montessori Benefits:

Montessori education offers our students opportunities to develop their potential as they step out into the world as engaged, competent, responsible, and respectful citizens with an understanding and appreciation that learning is for life.

1- Each student is valued as a unique individual:

Montessori education recognizes that students learn in different ways, and accommodates all learning styles.

Students are also free to learn at their own pace, each advancing through the curriculum as he is ready, guided by the teacher and an individualized learning plan.

**Students feel free to learn
and educate one's self
Image (1)**

2- Montessori students develop order, coordination, concentration, and independence:

Classroom design, materials, and daily routines support the individual's emerging "self-regulation" (ability to educate one's self, and to think about what one is learning).

3- Students are part of a close, caring community:

The multi-age classroom—typically spanning 3 years—re-creates a family structure. Older students enjoy stature as mentors and role models; younger students feel supported and gain confidence about the challenges ahead.

4- Montessori students enjoy freedom within limits:

Working within parameters set by their teachers, students are active participants in deciding what their focus of learning will be.

**5- Students are supported in becoming active seekers of knowledge:**

Teachers provide environments where students have the freedom and the tools to pursue answers to their own questions.

**Classroom environment to let
students feel freedom
Image (2)**



6- Self-correction and self-assessment are an integral part of the Montessori

classroom approach:

As they mature, students learn to look critically at their work, and become adept at recognizing, correcting, and learning from their errors.

Given the freedom and support to question, to probe deeply, and to make connections, Montessori students become confident, enthusiastic, self-directed learners. <https://amshq.org/Montessori-Education/Introduction-to-Montessori/Benefits-of-Montessori>.

Colors and Montessori:

Color is all around us from the time we were born and it is affecting our everyday life in many ways. By becoming aware of the power of color and its effects on our emotions, we can learn how to make positive changes in our lives.

Color is the byproduct of the spectrum of light, as it is reflected or absorbed, as received by the human eye and processed by the human brain.

Color derives from the spectrum of light (distribution of light energy versus wavelength) interacting in the eye with the spectral sensitivities of the light receptors.

When we look at an abstract artwork your brain instinctively searches for signs of rhythm and order to try to make spatial sense of the image. Hadeel Farahat, 2015.

Education of the Chromatic Sense (Visual Perception of Colors):

Our aim of education in general is twofold, biological and social. From the biological side we wish to help the natural development of the individual, from the social standpoint, it is our aim to prepare the individual for the environment. Under this last head technical education may be considered as having a place, since it teaches the individual to make use of his surroundings. The education of the senses is most important from both these points of view. Maria Montessori, 2004.

The progress of positive science is based upon its observations and following the same line made all its discoveries and their applications, which in the last century have so transformed our civic environment, that is, they have come through observation.

We must therefore prepare the new generation for this attitude, which has become necessary in our modern civilized life. We have always started from ideas, and have proceeded thence to motor activities; thus, for example, the method of education has always been to teach intellectually, and then to have the student follow the principles he has been taught. Maria Montessori edited 2004.

In many of Montessori lessons on the colors, we make use of pieces of brightly colored stuffs, and of balls covered with wool of different colors. Maria Montessori, 2004.

Common mistakes done by art students:

We have to know that there are some mistakes done by art students like –
First : Taking too long to begin; Some students are struck with a fear that they don't have an original starting point or that they haven't interpreted their exam topic in quite the right way. They spend weeks fretting over their topic selection and worrying whether it is good enough. Then **flaunting poor skills;** Struggling with a practical aspect of Art is not a mistake (no one is perfect; everyone is in the process of improving their skills and becoming better) but flaunting your weaknesses to the examiner is. Remove weak pieces and ensure that you present your skills in the best light. Also

failing to show development; Many Art qualifications (i.e. IGCSE, GCSE, NCEA and A Level Art) ask students to develop ideas from initial concept/s to final piece. Difficulties with development usually present themselves in two forms: submitting a body of unrelated work OR submitting work that doesn't develop at all.

Second: Continually restarting work; Those who take Art are often the perfectionist type, wanting every aspect of their portfolio to be perfect. This ambition is great – in fact, most teachers wish this was a more widely-held attitude – however the mechanisms for achieving this are often flawed. Continually restarting pieces of work is *not a good idea*. It is rare that a drawing, painting or mixed-media piece cannot be worked upon and improved. In almost all cases, initial 'bad' layers give an artwork substance, resulting in a richer final piece, and **drawing from second-hand sources;** drawing or painting from images taken by others is one of the most risky strategies a high school Art student can use. Using images sourced from magazines, books and the Internet scream of one thing: a student who cannot get off their backside long enough to find something of their own to draw. Also **spending too long on annotation;** For some students, writing comes naturally – they enjoy pouring words onto a page. Others use annotation as a form of procrastination, to avoid working on the visual material. There is nothing wrong with annotation. It is an excellent mechanism for refining ideas, evaluating work and communicating concepts and ideas, and **presenting work poorly;** whether you admit or not, presentation is important. Art and Design is a visual subject. Those who assess it are highly sensitive to visual cues. (<http://www.studentartguide.com/articles/top-10-mistakes-by-art-students>)

Our experiments:

In our experiments we will show three different ways we did with our students in basic of design subject, to teach them the power of colors and how can they chose colors and feel self-confident when deal with colors.

Our selections of artworks illustrated below have been chosen because they all use color in an inspirational manner.

We have analyzed each of these to demonstrate how great students use this visual element as a creative force in their work

Experiment one:

Phase one

Materials used:

- 1- Papers.
- 2- Different types of colors (Gouache, Water Colors).
- 3- Brushes.

Analysis:

1- Line:

Students use free hand and continuous lines to express the personal energy and to lead the eye in certain directions.

2- Tone:

Students use half tone to create a dramatic or tranquil atmosphere(A,B).

Use contrast of tones to create a sense of distance and a rhythm within a composition (C,D).

Use saturated tone to create a contrast of light and dark (E).

3- Colors:

Students use light primaries color (Green, Blue)(A,B)

Use contrast of colors (C,D).

Use Optical mixture of different colors (mixed in the eye) (E).



A



B



C



D



E

Phase two**Materials used:**

- 1- Papers.
- 2- Oil Colors.
- 3- Brushes.
- 4- Water.
- 5- Turpentine.

Analysis:**1-Texture:**

Students used different types of texture to define the surface quality of an artwork.

- Used the roughness (A,B)
- Used the smoothness (C,D).

In the four designs, the students used the texture in two ways:

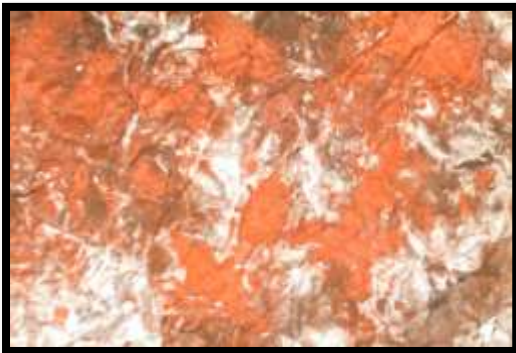
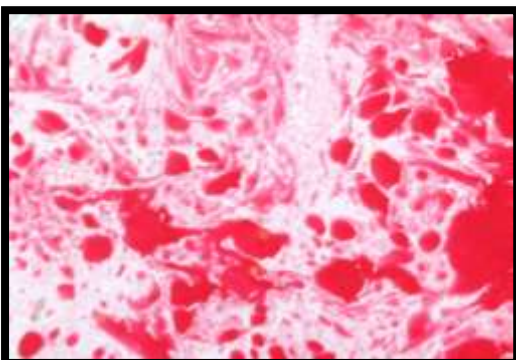
- Optically (through sight), they used their skillful painting technique to create the illusion of texture.
- Physically (through touch), they draw with expressive brushstrokes whose texture conveys the physical and emotional energy.

2- Tone:

Students used different types of tones to create the contrast of the lightness & the darkness of a color and to create the illusion of form.

3- color:

Students used color proportion to create the impact of the relative quantity of a given hue or value used in color compositions to achieve over-all unity, and create emphasis.

**A****B****C****D**

Phase Three**Materials used:**

- 1- Colored Papers.
- 2- Glue.

Analysis:**1- Line:**

The students used different types of lines.

- Broken lines to express the ephemeral.
- Thin lines to express the delicacy.
- Thick lines to express the strength.

2- Pattern:

The students used different collage by repeating or echoing the elements of an artwork to communicate a sense of balance, harmony, contrast, rhythm or movement.

They used man-made patterns by creating a compositional pattern of lines and shapes with all types (regular or irregular, organic or geometric, structural or decorative, positive or negative and repeating or random) to create a more decorative pattern of color, tone and texture across the work.

3- color:

Students used optical mixture of different colors

The very colors are used in each panel, depending on the choice of dominant color, the feeling of the composition, and even the appearance of each color, is altered.

**A****B****C****Conclusion:**

we let the students to feel freedom in choosing materials, so we encourage them to explore different materials, also we gave our students the instructions one on one basis, and allow them to listen to music during studios. Projects were short, concise, direct and aimed at enhancing the student's self-worth.

Experiment Two**Tools used:**

Computer

Analysis:

The students use different approaches of color in art work:

- Color as form.
- Color as contrast.
- Color as tone.
- Color as movement.

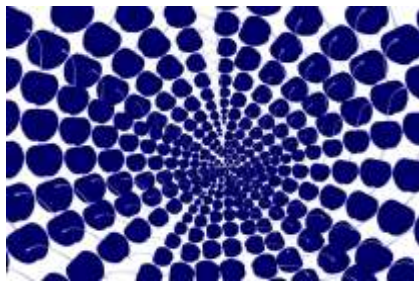
To create

- The illusion of form.
- A contrast of light and dark.
- A sense of depth and distance.
- A rhythm or pattern within a composition

Phase 1:**Conclusion:**

Phase1: The students develop themselves through coordination, concentration and independence, and they enjoy freedom within limits during studios.

Phase 2:
Example 1:



Example 2:



Conclusion:

Phase 2: As they mature the students learn to look critically at their work and become adept at recognizing, correcting and learning from their errors.

So our students began with simple learning tools, then gradually moving on to more complex tools and ideas.

Conclusions:

The study concludes that:

- Using Montessori Education as a New Method for Teaching Colors can help in teaching Design Basics for foundation level in faculties Arts and Design.
- Students as a part of education, build up their confidence and their self-correction.
- By using Montessori Education in teaching colors, will develop student's coordination, concentration and independence.
- Instructors should encourage their students to explore different materials and ways when they asked to do a certain project.

Hence the researchers would like to recommend that attention should be paid to use new methods in teaching to Cope with the contemporary challenges.

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