The Persistence of Vision Theory

How do our eyes see movement? The human eye has sensors that retain an image for a moment, so the brain continues to perceive an image for a fraction of a second after the image has passed. If the eye sees a series of still images very quickly one picture after another, with a tiny break in between to register each image, then the images will appear to move because they "overlap" in the brain. Our eyes cannot perceive the difference between separate images, so we are tricked into thinking we have seen movement!

The Phenakistoscope (also spelled phenakissecope) was an early animation device that used the persistence of vision principle to create an illusion of motion.

Although this principle had been recognized by the Greek mathematician Euclid and later in experiments by Newton, it was not until 1829 that this principle became firmly established by the Belgian Joseph Plateau. Plateau planned it in 1839 and invented it in 1841. Later the same year the Austrian Simon von Stampfer invented the stroboscopic disk, a similar machine. A contemporary edition of Britannica says “The phenakistoscope or magic disc...was originally invented by Dr. Roget, and improved by M. Plateau, at Brussels, and Dr. Faraday.”

STEP ONE: RESEARCH the works of others by answering the attached Artistic Statement Template: Research Questions and look on-line (this outline)

STEP TWO: DRAW a series of at least 3 conceptual sketches of possible themes for your own Phenakistoscope project showing a specific movement/action over 16 individual photograph frames.

STEP THREE: GET APPROVAL from the teacher on one of your sketches and create it by taking 16 individual image frames of the movement/action.

STEP FOUR: USE drawing and/or painting materials and cut and paste your images into the Phenakistoscope template (see attached)

STEP FIVE: GLUE the four pieces to a piece of cardboard and test with a tack and mirror.

STEP SIX: REFLECT by answering the following questions with your completed work:
1. What part of your finished project did you find most successful and why?
2. What part of your finished project did you find least successful and why?
3. If you had to do this project, what part would you change or improve on and why?
A) Research Questions
1. What is a Phenakistoscope?
2. Who invented the Phenakistoscope?
3. Why do we see these images as moving?
4. How can Phenakistoscopes make us aware of time?
5. Which way do you prefer viewing animation wheels? Why?

6. Using 6 elements and principles (line, shape, form, value, contrast, movement, rhythm, proportion, variety, unity, texture, space, proportion, colour, balance) analysis one of the examples on front page

B) Traditional/mixed manipulation techniques used in my work and how they support my intended visual message:

C) REFLECT on the following questions:
1. What part of your finished project did you find most successful and why?
2. What part of your finished project did you find least successful and why?
3. If you had to do this project, what part would you change or improve on and why?
<table>
<thead>
<tr>
<th>Knowledge/Understanding</th>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrates understanding of the elements &amp; principles of design in the mixed media (e.g., form, shape, movement)</td>
<td>Work does not meet assignments expectations for this category. Incomplete. 0</td>
<td>Student demonstrates limited understanding of the elements &amp; principles of design in the work. 0.25</td>
<td>Student demonstrates some understanding of the elements &amp; principles of design in the work. 0.50</td>
<td>Student demonstrates considerable understanding of the elements &amp; principles of design in the work. 0.75</td>
<td>Student demonstrates a high degree of understanding of the elements &amp; principles of design in the work. 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thinking/Inquiry</th>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenakistscope (16 images)</td>
<td>Work does not meet assignments expectations for this category. Incomplete. 0</td>
<td>Concept and context is unclear and/or weak. Meaning or ideas conveyed are not on par with student grade level. 0.25</td>
<td>Concept and context is slightly unclear and/or weak. Meaning or ideas conveyed are below expectations for student’s grade level. 0.50</td>
<td>Concept and context is clear and valid. Meaning or ideas conveyed are on par with student’s grade level. 0.75</td>
<td>Concept and context is clear and strong. Meaning or ideas conveyed are above expectations for student’s grade level. 1</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Communication Clarity:</th>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discusses research questions in the artistic statement</td>
<td>Work does not meet assignments expectations for this category. Incomplete. 0</td>
<td>Student discusses research questions in the artistic statement with limited clarity. 0.25</td>
<td>Student discusses research questions in the artistic statement with some clarity. 0.50</td>
<td>Student discusses research questions in the artistic statement with considerable clarity. 0.75</td>
<td>Student discusses research questions in the artistic statement with a high degree of clarity. 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reflective Questions</th>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomplete. 0</td>
<td>Poor, yes/no answers/limited incomplete. 0.25</td>
<td>Somewhat coherent and somewhat complete. 0.50</td>
<td>Clear and substantial answers. 0.75</td>
<td>Superior and insightful answers. 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application</th>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Process: Demonstration of Skill Development &amp; following procedures including Clean Up</td>
<td>Incomplete. 0</td>
<td>Student demonstrates limited effectiveness in demonstrating the creative process and following procedures. 5</td>
<td>Student demonstrates some effectiveness in demonstrating the creative process and following procedures. 5-6</td>
<td>Student demonstrates considerable effectiveness in demonstrating the creative process and following procedures. 7-8</td>
<td>Student demonstrates superior effectiveness in demonstrating the creative process and following procedures. 8-10</td>
</tr>
</tbody>
</table>

| Uses elements & principles of design and traditional/mixed manipulation techniques to produce an effective artwork (shape, movement, etc.) | Incomplete. 0 | Student demonstrates limited use of the elements & principles of design and traditional/mixed manipulation techniques to produce an art work of limited effectiveness. 1 | Student demonstrates some use of the elements & principles of design and traditional/mixed manipulation techniques to produce an art work of some effectiveness. 2-3 | Student demonstrates considerable use of the elements & principles of design and traditional/mixed manipulation techniques to produce an art work of considerable effectiveness. 3-4 | Student demonstrates a high degree of using the elements & principles of design and traditional/mixed manipulation techniques to produce a highly effective art work. 5 |

**A1. The Creative Process:** apply the creative process to create a variety of artworks, individually and/or collaboratively;
A1.1 use various strategies, individually and/or collaboratively, with increasing skill to generate, explore, and elaborate on original ideas and to develop, reflect on, and revise detailed plans for the creation of art works that address a variety of creative challenges (e.g., extend their skills in using brainstorming, concept webs, mind maps, and/or groups discussions to formulate original and innovative ideas for an art work on a social or personal theme; use critical research skills to explore and elaborate on ideas; demonstrate fluency in formulating clear and detailed plans; demonstrate flexibility in revising their plans on the basis of reflection).
A1.2 apply, with increasing fluency and flexibility, the appropriate stages of the creative process to produce two- and three-dimensional art works using a variety of traditional and contemporary media (e.g., extend their skills in working with a range of media; demonstrate flexibility in revising plans in response to problems encountered during other stages of the creative process; reflect on the effectiveness of preliminary versions of their work, and revise the work on the basis of reflection and self-assessment).

A1.3 document their use of each stage of the creative process, and provide evidence of critical inquiry, in a portfolio that includes a range of art works created for a variety of purposes (e.g., ensure that their portfolio includes the following: evidence of critical inquiry associated with idea generation and elaboration; evidence of research on how different artists approach specific themes and/or use particular techniques that can be adapted in their own work; preliminary and final works to show evidence of thoughtful revision), and review and reflect on the contents of their portfolio to determine how effectively they have used the creative process.

A2. The Elements and Principles of Design: apply the elements and principles of design to create art works for the purpose of self-expression and to communicate ideas, information, and/or messages.

A2.1 apply the elements and principles of design with increasing skill and creativity to produce two- and three-dimensional art works that express personal feelings and communicate specific emotions (e.g., extend their skills in combining various elements and principles to convey a sense of fear, happiness, hopefulness, despair).

A2.2 apply the elements and principles of design as well as a wide range of art-making conventions with increasing skill and creativity to produce art works that comment and/or communicate a clear point of view on a variety of issues (e.g., extend their skills by manipulating elements and principles and using conventions in creative ways to produce an art work that conveys the point of view of a teenager living on the street or that comments on a current event or social issue).

A3. Production and Presentation: produce art works, using a variety of media/materials and traditional and emerging technologies, tools, and techniques, and demonstrate an understanding of a variety of ways of presenting their works and the works of others.

A3.1 use with increasing skill a wide variety of media, including alternative media, and current technologies to create two- and three-dimensional art works for a variety of purposes (e.g., extend their skills in the manipulation of a variety of media and technologies to create a sculpture for an outdoor space, a mixed-media work for display on the Internet, an installation evoking their cultural heritage).

A3.2 use with increasing skill a wide variety of traditional and current materials, technologies, techniques, and tools to create original art works for a variety of purposes and audiences.

A3.3 demonstrate an understanding of the appropriate standards and conventions for presenting art works for a variety of purposes (e.g., as samples in a portfolio to be viewed by prospective employers or postsecondary educational institutions; as part of a year-end exhibit by the senior class; as part of a thematic display in a cultural centre; for inclusion in a virtual gallery), and apply these standards and conventions when preparing various types of visual art works for presentation.

B1. The Critical Analysis Process: demonstrate an understanding of the critical analysis process by examining, interpreting, evaluating, and reflecting on various art works.

B1.1 demonstrate the ability to support their initial responses to a variety of art works with informed understanding of the works' artistic form and function (e.g., describe their initial response to an art work, and explain in detail how specific aspects of the work's content, formal qualities, and media inform that response).

B1.2 deconstruct with increasing skill and insight the visual content and the use of elements and principles of design in their own art work and the work of others (e.g., extend their skills in identifying individual elements and principles and aspects of the visual content in an art work, interpreting their function, and analysing their effect; compare and contrast the use of shape, form, line, texture, space, and balance in Frank Lloyd Wright’s Falling Water and Moshe Safdie’s Habitat).

B1.3 explain in detail, with reference to a variety of historical and contemporary art works (e.g., the social scenes painted by Pieter Bruegel the Elder; Joseph Paxton’s Crystal Palace; works by Canadian war artists, such as Alex Colville’s Bodies in a Grave or Molly Lamb Bobak’s Private Roy, Canadian Women’s Army Corps), how knowledge of a work’s cultural and historical context, achieved through extensive research, has clarified and enriched their understanding and interpretation of a work’s intent and meaning.

B1.4 describe in detail and reflect on with increasing insight the qualities of their art works and the works of others, and evaluate the effectiveness of these works using a wide variety of criteria (e.g., provide an informed explanation of why a work of art is, or is not, successful with respect to its ability to communicate a message or emotion, its technical and aesthetic conventions, its form and stylistic qualities, its originality).

B2. Art, Society, and Values: demonstrate an understanding of how art works reflect the societies in which they were created, and how they can affect both social and personal values.

B2.1 analyse, on the basis of research, the function and social impact of different kinds of art works in both past and present societies (e.g., how art works function to decorate private and public space, to investigate and draw attention to themes and issues, to criticize political policy and social norms, to satirize public figures, to memorialize people and commemorate events, to preserve aspects of a people’s culture; how works of art can symbolize political, religious, social, or economic power; the power of art to help change personal and public positions on social and political ideas).

B2.2 assess the impact of socio-economic, political, cultural, and/or spiritual factors on the production of art works (e.g., how artists are affected by oppression, persecution, censorship, or war, or by cultural, political, and/or religious beliefs; how access to locations, materials, technologies, and funding can affect the production of art works).

C1. Background Knowledge: demonstrate an understanding of, and use correct terminology when referring to, elements, principles, and other components related to visual arts.

C1.1 extend their understanding of the elements and principles of design, and use terminology related to these elements and principles correctly and appropriately when creating or analysing a variety of art works (e.g., when analysing how artists' manipulation of space, movement, form, and proportion affects meaning in an installation or an environmental work).

C1.2 explain in detail terminology related to a wide variety of techniques, materials, and tools (e.g., techniques and materials associated with installation art; additive and subtractive techniques, digital manipulation, impasto, optical colour mixing, pointilism), and use this terminology correctly and appropriately when creating, analysing, and/or presenting art works.

C1.3 explain in detail the stages of the creative process and the critical analysis process, and explain, using appropriate terminology, how these processes contribute to the successful creation and analysis of art works.

C2. Conventions and Techniques: demonstrate an understanding of conventions and techniques used in the creation of visual art works.

C2.1 extend their understanding of a wide variety of techniques that artists use to achieve a range of specific effects (e.g., techniques used to create a range of textures in an art work; to develop the connection and relationship between forms in a composition, to draw attention to specific parts of a work).

C2.2 extend their understanding of the variety of conventions used in visual art (e.g., allegory, appropriation, juxtaposition, synectics; conventions associated with formalism, objective and non-objective abstraction, propaganda, realism, social commentary), and explain in detail how they are used in a variety of art works.

C3. Responsible Practices: demonstrate an understanding of responsible practices in visual arts.

C3.1 demonstrate appropriate health and safety procedures and conscientious practices in the selection and use of various materials, techniques, tools, and technologies when producing or presenting art works (e.g., demonstrate safe practices when creating installations, assemblages, earthworks, constructions, multimedia projects; demonstrate appropriate protocols, deportment, and respect for others when working in a studio or visiting a presentation space).