Evaluation Report:
“Arthur C. Danto’s The Artworld”
Multi-Media Study Environment

Date: 1/28/02
Director of Projects: Peter Sommer
Evaluator: Arlene R. Atherton
Version: Final Draft 2.0
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Evaluation Report:
“Arthur C. Danto’s The Art World”
Multi-Media Study Environment

1.0 Project Description

1.1 History of the Multi Media Study Environment
Predecessor to the multi media study environment is the multimedia template. The multi-media template began as a core text for close examination. The initial MMT allowed for links to reference sources within the Columbia University Library domain, such as encyclopedias, dictionaries, biographies, and other web links. The purpose was to create a digital desktop for the assembly of text material a student normally consults while studying an essay.

The innovation of the MMT was the use of a split window, with the left frame as the resources frame, and the right frame for the core text. The core text uses hyperlinks in a single color to refer to the resource section. The resource section uses a bold title as the link, and a short paragraph to describe the resource. When the user activates a link in the resource window from reference index, it appears as a pop-up window next to

Fig.1

resource window, overlaying the core text The student engages the reference index exactly in the manner for keyword search as they would if they linked directly in from the Columbia University Library (postmodernism, or the cultural logic of late capitalism). In addition to the reference access capacity without leaving the site, there are color-coded keywords as a hyperlink displaying explanatory material in the resource section. (from encyclopedia, dictionary, or other source). The resource index is not available separately from the keyword link. The color code acts as an identifier only. The resources area creates a context for the text through biographies, concepts, artworks, author’s notes (not editorial commentary), and links to other websites. Initially, hypermedia’s ability to improve learning performance was unknown, it was believed that “Hypermedia might work better as an information retrieval interface than as a learning enhancing tool” (Lehto et al, 1995).

The second generation utilized the same template, but adds editorial material to enhance the understanding of the core text or spine document. This appears in the resource area of the left window with a separate color code for author's notes or editor's notes. These instructor’s editorial comments begin a dialogue with the site author and the student regarding the spine text. (Ex. "On Christian Doctrine by Saint Augustine").

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1 Faculty sponsor  Frank Morretti, Project Manager David Miele, CCNMTL; Spring, 1999.
2 Faculty sponsor  Peter Awn, Project Manager Mark Meyer. CCNMTL; Spring, 2000.
A project of visual nature brought about the entire rethinking of the Multi-Media Template into the concept of a Multi-Media Study Environment. Overall access to links related to the course for syllabus, bulletin board, and student projects in "Hell's Kitchen South", changed the relationship between core material, the course environment, and supplementary material to the primary document.

The third generation uses the same format, integrating the original idea of the resources window with visual aids of icons, and expanding the breadth of the understanding of the core text through the use of two versions of text, and six variations on film direction and characterization.

This use of additional material external to the original material enhances the comprehension of intent and application of the primary subject (Ex. “King Lear by William Shakespeare”). Once the idea that the MMT could provide context by including outside resources, it expands this concept to include the use of other media, film clips, video clips, still images, and alternate editions of the core text. This introduced icons to the resources area in addition to the index menus.

The idea of the desktop as a single view of continuously displayed content with pop-up windows to provide related material in various formats adds another dimension to idea of studying written text only through other written text.

The goal shifts to replicate a study environment, whereby the student assembles not just resource material, and related material in forms of art, film, and text variation, but contextual background deepens. The inclusion of the author’s history of works, interviews with primary scholars on the subject, and contemporary essays, shifts the perspective on the spine text, and allows for other sensory venues to comprehend the primary document. ("Souls of Black Folk" by W.E.B. DuBois).
It is the inclusion of other primary and secondary sources as in a research context, which expands the site from a study source to a study environment. This supports the change to the term Multi Media Study Environment. It is a far more involved format with content rich material that enhances the students' appreciation for fine aspects of the core document, “Hypermedia environments can indeed promote the appreciation of literature (and of texts in other disciplines) as they nurture the growth of the learner in intellect and spirit (Dyrden, 1994, 284). The assemblage of related material helps to establish the breath for research, and expands a student’s study habits. This trains them into considering a broader range of applicable material for analyzing written text, and transfers a mode of collecting supporting information around a primary source.

The resources window extends its function from a reference legend to a resource index. All categories can be searched by indexing system rather than when one comes across them in the text. In this manner the MMSE utilizes best advantage Hypermedia affords, “for users in specific tasks that require rapid searching through lengthy or multiple information resources and where data manipulation and comparison are necessary” (Dillon and Gabbard, 1998, 21)

The following is full listing of the MMT/MMSE produced by CCNMTL:

1.2 Concept behind the Multi-Media Study Environment
The present generation of the Multi-Media Study Environment continues to expand the learning setting paradigm by increasing the depth of analysis of the core document matched with the breath of resources and supplementary study sources. In this framework the core document operates as a spine to the Multi-media environment and the supplementary material provides supporting structure to expand the understanding of the core document. The core document itself is expanded to include sub-discussions around key paragraphs. This context allows the experienced instructor to layer various arguments within the core text for further analysis. In this manner the MMSE increases the depth of academic study. These arguments are then linked to specific cases and settings, or related material that describes the pivot points for new theory. This approach not only provides historical setting and comprehension of terminology, but also illuminates the salient concepts with supporting evidence upon which a decision has been made (Example UDHR). The extension of the material into a real-life application produces yet another level of learning for the user.

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4 Faculty sponsor Frank Moretti, Project Manager David Miele, CCNMTL Spring, 1999.
5 Faculty sponsor Andrea Solomon, Project Manager Mark Meyer, CCNMTL Fall, 1999.
6 Faculty sponsor Frank Moretti, Project Manager David Miele, CCNMTL Fall, 2000.
7 Faculty sponsor Peter Awn, Project Manager, Mark Meyer; CCNMTL Fall, 2000.
8 Faculty sponsor Peter Awn, Project Manager Mark Meyer, CCNMTL Spring, 2000.
9 Faculty sponsor David Smiley, Project Manager David Miele, CCNMTL Spring, 2000.
10 Faculty sponsor Dean Peter Awn, Project Manager Mark Meyer, CCNMTL Spring, 2001.
11 Faculty sponsor Alan Brinkley, Casey Blake, Manning Marable, Robert O'Meally, Project Manager Mark Meyer, CCNMTL Spring, 2001.
12 Faculty sponsor Peter Danchin, Project Manager David Vanesselyon, CCNMTL Spring, 2002.
13 Faculty sponsor Ian Bent, Project Manager Kristen Sosulski, CCNMTL Spring, 2002.
Through the multi-media study environment, the student focuses on the primary text, however the time spent in redundant tasks of index queries have been eliminated. The resources section offers descriptive passages for key persons, concepts, documents, or related institutions. This material is available for simultaneous viewing with the core document allowing the user to maintain their line of thought. With this in mind other media formats have been embedded in the narrative to enrich the users experience of the discussion at hand.

Hyperlink technology allows media presentation in a variety of sensory experiences. Other means of sequenced information through film and video engage mental imagery and audio imprinting. This sensory input is operationally different from reading and cognitive processing. Sensory input maps onto long-term memory under different cues that may aid the student not only in cross-referencing material, but also for information retrieval. The ability to examine the same text but in different editions, text style, color, still images or illustrations create a texture in the learning environment uncommon in conventional learning.

1.3 Learning Styles and the Multi-Media Study Environment

Studies on learning in HyperText environment have reached the following conclusions: “a) Hypermedia enables nonlinear access to vast amounts of information (Nielsen, 1995); b) users can explore information in depth on demand (Collier, 1987); (c) interaction with the instructional material can be self-paced (Barrett, 1988); (d) hypermedia is attention capturing or engaging to use (Jonassen, 1989); and (e) hypermedia represents a natural form of representation with respect to the workings of the human mind (Delany & Gilbert, 1991)”:(Dillon Gabbard 1998, 2) The examination of these elements have been consistent with the findings on the evaluation of the MMSE developed by CCNMTL.

Other learning modules have attempted to simulate the teaching experience in a remote environment by leading the student through a lecture-like, or predetermined sequence for delivery of information. This fixed syntax forces the student to think in one cognitive manner. What makes the multi-media study environment so unique is it non-linear, non-sequence, global navigation presentation. Findings on Hypermedia studies indicate that allows the student to follow the natural mental association, focus on recall, and classification of the material they encounter. It allows the user the opportunity to scan the text, and at a glance note all the available supplementary material to explore the concepts in richer detail. This open environment approach allows the user to access the material according to their learning styles, learning orientation and cognitive processing.

The hyper-media format allows the students to engage in multi-sensory experience compatible with their learning styles. People learn in different ways according to their preferences in perceiving and processing information, “There are numerous learning style theories (Clark, 2000; Fardouly, 1998; Peirce, 2000). For example, the left brain versus the right brain and the seven human intelligences” (Mergel, May 1998) The opportunity to concentrate on the core text with the expansion through use of other text, references, or explanatory sources aids the student who perceives in abstract thinking process, comparing information, reflecting, and thinking about it. Students who may be classified as concrete perceivers prefer a means of experiencing the material, either auditory, visual, or tactile. The combination of visual material through film, video, or still images provides an avenue for accessing the material normally unavailable to a student reading a n essay. The audio portion of interviews allows a sensory dynamic rarely available in the course of study. Audio/Visual material has formerly introduced into the classroom, or sought in independent study.
Extending beyond the perception variance of students the MMSE addresses the student’s learning orientation: “Field Independent learners were the only learners able to successfully use structural cues to acquire more structural knowledge information.... It is likely that field independent learners are better hypermedia processors, especially as the form of the hypermedia becomes more inferential and less overtly structured” (Jonassen and Wang, 1993, 7). The MMSE offers a maximum of learner control. Students advance through the material as desired according to their own pace and choice of resources to select.14 In this manner they are not restrained by the presentation, but rather encouraged by the presentation to engage the materials according to their natural learning orientation, According to the authors,

Another dynamic takes place with the MMSE beyond study of a core text. The ability to access related material expands the sense of boundaries or limitations one initially envisions in approaching a text document. Landow writes: "Electronic linking shifts the boundaries between one text and another, as well as between the author and the reader and between the teacher and the student" (YR, 33). The relations of the text to itself, the text to comparative text, the text to explanatory text changes the understanding capacity of the primary document. The enrichment of the comprehension of the authors argument establishes a new relationship for the reader and author. The integration of the MMSE in a course environment both dissolves the traditional setting of classroom by offering the student resources once found only in the course-room and allows the professor the opportunity to concentrate on the principles of learning with their students once they have had the opportunity to absorb the depth offered by the MMSE.

The final affect of the MMSE is the manner it operates with a student’s normal cognitive processing. Shin et al. stated that "learners with different levels of prior knowledge require different kinds of instructional approaches" (45). The MMSE open forum allows the student to organize their own approach to the material. The MMSE presentation solicits the cognitive school of thought says that we all organize knowledge and meaning by modifying mental representations. We select information from the environment and store it short-term memory. At that point, we decide to either forget it or process it and store it into long-term memory. Essentially, cognitivists believe we learn by association.

1.4 Arthur C. Danto's The Artworld as core text.

“Danto: The Art World” is a multi-media study environment for the concentrated study of a primary document: Arthur C. Danto’s essay “The Art World” published in the Journal of Philosophy, 1964. This essay proved to be significant for scholars in the philosophy of aesthetics, art criticism, and the study of twentieth century contemporary art15. Michael Kellyii; Adjunct Associate Professor at Columbia University, Managing Editor, Journal of Philosophy has expounded upon Danto's essay with additional notes to help the reader understand the thought process behind some of Danto's thinking, development of underlying arguments, and influence of particular works of art supporting Danto's theory. In rare footage, we have Michael Kelly interviewing Arthur C. Danto, who elaborates upon his theories both at conception, as well as his opinion of them today.

"Danto applied to the philosophy of art his method of indiscernible counterparts, a method which characterizes his philosophy in other areas as well. The strategy is to examine two objects which

14 Research shows that “Cues had no significant effect on active learners, but passive learners showed a significant increase in the achievement variable in the explicit cue condition, suggesting that passive learners may react to prompts for them to follow links. Lee and Lehman advised that designers take such individual differences into account” (1993).
15 Web of Science- Institute for Scientific Information 2001, 235 citations; Bibliography of the History of Art, 92 citations; Humanities Abstracts, 68 citations; and Art Bibliographies- Modern, 6 citations.
look identical—for example, Andy Warhol's Brillo Box and the Brillo boxes in a supermarket—and asks what makes them categorically different: what makes the former, but not the latter, an artwork. Danto's philosophy of art received its fullest elaboration in his 1981 book The Transfiguration of the Commonplace, which attempted to give an essentialist definition of art: to be an artwork, something must have meaning and it must embody the meaning that it has. Crucial in both of these works was the idea that objects are "transfigured" into artworks by the artists, as when Warhol transfigures ordinary supermarket Brillo cartons into works of art. Such transfiguration is possible only at a given time in history. "Not everything is possible at every time", Danto is fond of quoting (from the art historian Heinrich Wolfflin). At the same time, seeing something as an artwork—as an embodied meaning—requires a certain "atmosphere of artistic theory, a knowledge of the history of art." Thus, artworks are artworks because of their "artworld," not necessarily because of the way they look.

Danto expanded his philosophy of art in two later books, The Philosophical Disenfranchisement of Art (1987) and After the End of Art (1997), both of which discuss his controversial theory that the history of art reached its end around the time of Warhol's work in 1964. The contention is not that artworks have not been produced since then (or will not be in the future), but that art no longer has a progressive history or master narrative. Rather, he believes we have entered a "posthistorical" phase in which anything can be a work of art, regardless of what it looks like, if there is an theory to engender it."16

It is clear that this original essay became the departure point for a multitude of theories in art criticism, aesthetics, philosophy, history, sociology, and creative works. A student's grasp of Danto's first concept of the "posthistorical" phase is critical for evaluation of subsequent theories in related disciplines. While at initial review aesthetics may appear to be a narrow specialty, the construction of his argument, the analytical approach used, and principles of logic offer rich study irrespective of subject. This is a very important work of scholarship at many levels which well deserves the in-depth treatment through a multi-media study environment.

1.5 Physical Description of Arthur C. Danto's The Artworld

"Arthur C. Danto's The Artworld" is a multi-media study environment. As such, it is designed for continuous display of content in the primary viewing window, and the left resources area. The horizontal dimensions give 2 1/2 inches for the resources window, 5 1/2 inches for the primary viewing window. Both windows have a left margin of 1/2 inch for placement of the scroll bar. The cumulative dimensions fit a normal document size of 8 1/2 inches wide. The signature statement for a multi-media study environment is a rectangular logo; this includes a pictorial representation of the subject of the MMSE.(2 3/4 wide and 2 inches high.)

For Danto's Artworld the signifier is a portrait of Andy Warhol, ranging from deep red17 for the shadows to yellow 18 for the highlights, (insert logo picture) and a four color illustration of his Brillo Box (1964, Dakis Jannou Collection at the Factory of Athens Fine Art School)

Fig.4

16 Adapted from Current Biography Yearbook, 1995
17 Web color
18
Bright colors from the 1960’s brings appreciation that the topic is art. A hot pink border surround the exterior margin and internal borders. Unique to this site is the use of black background and white or colored font. Bright red color fills the heading bars contrasted with orange font for the headings.

The top navigational bar offers resources of rich texture including study sources, interviews, and films.

The study sources are a compilation of essay written contemporary to Danto's The Artworld. The study sources uses a black background and blue\(^1\) font which act as hyperlinks to the full text article.

The entire article is available for study while the core document of “Danto’s Art World” remains in the primary display window.

The “jump to #” allows the user to skip to a paragraph number in the spine text.

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9. "Glas Oldenburg, Discussion, 1964" by Claes Oldenburg, Contemporary Art
The “interviews” menu presents pink background and white font. The continuity for color to the site continue with red to fill the heading bar an yellow or white font for the heading title.

Both the resources window and the primary viewing window use a black background with white font. The primary viewing window gives a continuous display of the text for "The Artworld"

The lower portion of the primary window has bottom navigation bar featuring about, help, and feedback.

The “about” window offers the credits for the site’s creation also displayed with pink borders, black background, and white font (See Appendix H, I). The “help” section contains the explanations of the navigational buttons, icons, the labeling of resource and annotation classification (see appendix). The “feedback” window allows an online user survey regarding the site.
The left resources area is headed by an "index" tab with a complementary "search" button for search in either the resource or the primary text.

The resources are accessed through an index pull down menu. The up and down arrow icons cue the user to anticipate the pull-down menu. The index categories are color coordinated with the keywords in the primary text. There are three categories: Bios (red), Explanatory Note (orange), and Slideshows (yellow). These index categories lie on a black background.

The bottom of the frame offers another navigational feature, which allows the user to advance or retreat by one record in the index currently under view in the resources frame.

An interesting element to the presentation of “Danto's Artworld” is the means of indexing the biography, in descending order by first name. This form of introduction to persons is not scholarly, but personal, more similar to characters presented in a play; Literally these are the personas that populate the Artworld.

This subtlety in presentation is in keeping with Danto's explanation of his meaning of the term Artworld, "a world that consists of works of art, a self enriching community of ontologically complex objects, often inter-referential, (or, as the expression later came to be used, 'intertextual'), and which above all had a historical vector, so that something could be part of that world at one time, but not at an earlier time."
As a whole the "Arthur C. Danto's The Artworld" affords the user the option to continuously all the resources available to them to investigate the core document, without obscuring the text of the essay.

Fig. 18

1.6 Operational Description of Arthur C. Danto's the Artworld

The multi-media study environment provides multiple resources related to the primary text to create a context surrounding the core material. It recreates in hypertext media format the experience of conventional study techniques, which combines the consulting of encyclopedias, dictionary of art, biographical profiles, period films, related essays contemporary to Danto’s work, and in-depth interviews by video of Arthur C. Danto.

While all resources are made available through hyperlink feature, users engage the supplementary material in a variety of formats. RealPlayer includes archival films and interviews (video) of Michael Kelly and Arthur C. Danto. This provides both visual and audio media as an alternative sensory narrative to the framework of the core text. The archival films provide the user with period aesthetics through color and pattern combination in dress, artwork, and use of existing technology. The film of artist interviews describes the philosophical thought of the day. This presentation aids a student who is sensitive to visual imagery, audio stimulus, or kinesthetic operations, who learns by

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19 Real Player includes a ten band graphic equalizer for powerful lows and crystal-clear highs. Default presets or your own setting. It has advanced video controls to adjust the brightness, contrast, color, and more. (http://www.real.com)
envisioning themselves in the task or setting. Both films and videos not only reinforce primary arguments, but also provides discourse based on their relationship either contemporary or subsequent to Danto's essay.

The study sources as a compilation of essays establish a similar discourse, but within the medium of text to text. The study sources operates at three levels; one, it provide historical context due to their contemporaneous composition; two, it allow students to make textual comparison within the same subject; and three, it provide students who are more abstract and reflective in learning style a familiar medium of text to analyze the core essay.

The indexing structure of the resources section emulates common research tasks to query a person, idea, or term. The resource links to extracts from reference materials quickly allows the user the opportunity to expand their background on the subject, locating exactly what they want in a few seconds. Research shows that “Hypermedia presentation is considered to improve comprehension by virtue of its capability of supporting structured access, rapid manipulation, and individual learner control” (Dillon and Gabbard, 1998; 5) The simultaneous view of the resource window and the primary viewing window with the core text, does not require the user to divide attention to reference questions while examining the essay.

The open search feature lets the user bring prior knowledge into the study environment, to quickly find individuals, concepts, or artworks with which they are familiar, and test them against the criteria of the Danto's essay. This ability to skip and skim establishes a surface understanding of the essay in light of previous knowledge. It also builds a dimensionality to the overall hypothesis, whereby the student incorporates new knowledge developing relational understanding to prior knowledge.

2.0 Goals of the Evaluation Plan
The goals for the evaluation plan fall into two categories: one, the effectiveness of the multi-media study environment irrespective of subject; and two, the assessment of the site’s capacity to enrich the student’s understanding of the subject.

2.1.0 Goal One: The Effectiveness of the Multi-Media Study Environment
The first goal examines the intuitive approach of a student engaging the multi-media study environment hypermedia format, and its capacity to simultaneously view a variety of resources within a single viewing platform. It also requires an investigation of the modifications in the teaching process to integrate an innovative teaching tool.

2.1.1 Engaging the Multi-Media Study Environment
The MMSE is a new format for multiple content presentation. As such, is there something inherent in the manner in which people utilize this format? Are there factors that operate as universals, and others as particular to a learning style? This material may be useful for both future design as well as introduction to potential users. How best might this introduction take place?

- How does one engage the resources available?
- Are there behavior patterns to approaching resources?
- Do these patterns affect the method a student engages the site for research?
- Is there a need to adjust the navigation, instructions, or orientation to the MMSE to accommodate these different approaches?
- What appears to be a primary attraction to the MMSE?
- What do people focus upon first?
• Where do they spend time on the site?
• What locations of the site do they avoid?
• How does a person investigate combining resources?
• Does prior experience with computers or indexing systems affect a person’s ease of use with the MMSE?

2.1.2.0 Efficiency of the technology for Arthur C. Danto's The Artworld
In evaluating the technology, one must keep in mind Danto's Artworld will also be judged by its perceptive quality of the navigational methods to content, graphic presentation, site design through, and information architecture.
  • Is the relationship between navigation and content transparent, intuitive, and consistent?
  • In terms of accessibility, does the graphic presentation cohesive throughout the site?
  • How well is the site organized for use without prior instruction?
  • What is the readability of the site?
  • Are the icons easily understandable?
  • Is the layout sensible in relation to the content?
  • Does the navigation offer seamless transitions or require unnecessary steps?

2.1.2.2. How does "Arthur C. Danto's The Artworld" enrich the student's understanding of the philosophy of aesthetics?
The second goal looks at the integration of resources within the learning process, and evaluates both the complementary nature of the resources to the core text for learning comprehension, as well as the content classification in relationship to the overall construction of context material.
  • How well do people move between resources?
  • Is there a logical progression for such an inquiry?
  • How effective is the global access from a single display format?
  • Is there an enhancement of learning by shifting between resources?
  • Do multiple resources stimulate other approaches during the inquiry process?

2.1.3 Modifications in the Teaching Process
By the nature of introducing a new form of media, or a new teaching tool to the teaching experience, adaptations will be made by both student and instructor. What factors aid in the integration process? What obstacles are there for an instructor to incorporate a MMSE into the curriculum? What adjustments can the CCNMTL make in either MMSE orientation, or study guidelines to facilitate the use of the MMSE.
  • Does past experience in using technology aid a faculty member in integrating an MMSE as a teaching tool in their course?
  • In order to teach key concepts, does an MMSE use similar methods to what the instructor has been using?
  • Does the MMSE have components necessary for a student to absorb the key concepts in the course?
  • Does the method of introduction of the MMSE have an effect upon the frequency or quality of student use?
  • Does the use of a MMSE in the classroom change the teaching style, or course preparation? If so, how?
  • How does the use of MMSE under different circumstances affect a course?
(Supplementary Study Material, Recommended Viewing, A segment in the course, As a key component of the course.)
3.0 Evaluation Plan
The overall evaluation process includes a review of four elements: 1) the examination of the “Danto’s Art World” on the learning environment; 2) the effect of “Danto’s Art World” on the learning process of the study of the philosophy of aesthetics; 3) the consequence of “Danto’s Art World” on the learning outcome to assimilate the precepts in Arthur C. Danto’s essay; and 4) the appropriateness of this hypertext media construction around academic consistency of source materials.

3.1 Examination of the Learning Environment
Examination of the learning environment requires the perspective of faculty in terms of adjustments in their course preparation, lecture material in relationship with readings (including multi-media text), and fielding student inquiries about the site material. It also includes the instructor’s opinion of the impact of student interaction with the multi-media study environment for discussion, reading assignments, papers, and/or research.

3.2. Enrichment of the Learning Process
Understanding the enrichment of the learning process includes the correlation of the course learning objective content to the components found in multi-media study environment. One must assess the compatibility of learning mode and style required by the student to master the course learning objectives, compared to the mode offered in the multi-media study environment. It also compares the conventional study environment with that offered through hypertext media.

3.3. Assessment of the Learning Outcome
Assessment of the learning outcome results from the reflective response of the multi-media study environment experience by the student. In addition, the knowledge of instruction and student achievement by experienced faculty allows for an opinion of substantial weight. These qualitative statements form the body of evidence pointing to the results of this new learning tool.

3.4 Appropriateness of the Innovation of Technology
The appropriateness of the innovation of a multi-media study environment includes the evaluation of its internal integrity. As an interactive device, has the technology been employed in its most efficient use to access the source material? Is the navigational structure compatible with the information architecture? Does the site’s visual layout imply the construction of the content material, and its relationship to each component? Does the environment promote the continuous concentration on the primary subject while providing context? Do the components remain academically consistent with the primary text or spine material?

4.0 Evaluation Methodology
“Arthur C. Danto’s Art World” is in the formative stage of development. At present there is no means to evaluate the use of the site within a learning context, since there are no courses using the site this semester. Learning outcome is a combination of the student’s experience and instructors appraisal of student achievement. The student must master the learning objectives of the course and develop new skills. The instructor’s conclusion of the student achievement occurs by comparing conventional methods with the addition of the multi-media study environment. In absence of a course, one does not have the base-line information from which to draw an adequate assessment. Therefore, the evaluation will concentrate on the remaining two elements: One, observing the learning process as students engage the multi-media study environment; and two, determining the efficiency of the technology and congruity of content presentation.
4.1.1 Focus Group Recruiting
Student experience will be observed through a focus group session. Students will be drawn from the general student community of Columbia University including undergraduates as well as graduate population. Students will be recruited using three methods: One, referral from participating faculty; Two, broadcast e-mail through Departmental studies related to Philosophy, Art, Art History, Comparative Literature, Sociology, Anthropology, History, and American Studies; Three, use of ‘flyers’ announcing the study posted in areas of student congregation. (See Appendix A, B, C)

4.1.2 Focus Group- Study Design
The focus group will be conducted in four parts: One, a presentation by the Project Manager; Two, a period to explore the site; Three, a sample essay question for the participants to answer; and Four a discussion period to address the quality of learning in the environment, and specifics of site use, presentation, and construction. (See Appendix D).

The Project Manager’s role in the Study Group will be to orient the participants to the work of CCNMTL, the concept of a multi-media study environment, and a general overview of the site’s resources. The period of exploration provides the observation of a person’s intuitive response to the multi-media study environment. How does one engage the resources available? What appears to be a primary attraction? How does a person investigate combining resources? How well is the site organized for use without prior instruction? The sample question is designed to provide a simulation of utilizing the site’s resources as a research tool. Investigating a line of inquiry across the range of contextual material. How well do people move between resources? Is there a logical progression for such an inquiry? How effective is the global access from a single display format? Is there an enhancement of learning by shifting between resources? Do multiple resources stimulate other approaches during the inquiry process? The final discussion period allows for synergy and stimulation of recall of their experience as the participants reflect upon the manner they have interacted with the multi-media study environment. The questions intend to provoke an opinion they may not have been conscious of during the session. In addition, vague areas regarding site interaction and operation are raised for the purpose of soliciting suggestions and alternatives. Possible solutions are suggested for their consideration and feedback on viability.

4.1.3 Study Group Documentation
Documentation of the focus group takes place at three levels: One, a written survey questionnaire must be completed at the end of each segment; Two, observation notes by the evaluator; and Three, video recording. The written questionnaire provides a permanent record and the ability to collate specific responses. (See Appendix E, F) The observation indicates the degree of engagement in the evaluation process, a notation of group response in a temporal setting, and an estimate of attraction to the task. The video recording freezes sequences of the period of site exploration. In lieu of a directed sequence this material is less practical, but rather an experimentation to determine pattern of use. The video record of the discussion offers the opportunity to match opinions with proposed solutions, and gain an appraisal of consensus by the participants. It also serves as primary source to document the validity of affective response not verbalized.

4.2 Faculty Survey Regarding “Danto's Art World” and the Learning Environment
In an attempt to anticipate Learning Environment issues, a faculty questionnaire has been designed to investigate the integration of “Arthur C. Danto’s The Art World” with current courses offered at Columbia University. Faculty participants are drawn first from referral by Michael Kelly the site’s academic sponsor, and from volunteers of faculty teaching courses in a related field to philosophy, aesthetics, or contemporary art.
4.3 In-depth Study to Evaluate Learning Outcome
A second group is planned for an in-depth review of the site from an academic standpoint. Participants will be asked to view the site on their own, and have a sample question designed by Michael Kelly. They will be interviewed and taped by a “talk back” method discussing their thought processes, awareness, and learning experience in using the “Arthur C. Danto’s Art World” in the pursuit of comprehending the philosophy of aesthetics.

5.0 Timeline for Implementation

Data Collection:
Phase I – Recruiting participants
November 9th-15th

Phase II – Focus Group Study
November 16th

Phase III – In-depth Academic Use Study
November 19th-December 7th by individual appointment

Phase IV– Faculty Questionnaires
November 19th-December 7th by individual appointment

Phase V – Collating Findings
December 10th-15th

6.0 Findings

6.1 Participant Background
The purpose of the study examines the range and scope of user approach to the MMSE. More important was a cross-section of the Columbia University community from undergraduates, graduates, doctoral candidates, and faculty. To survey the range of learning styles, learning orientation, and academic sophistication yielded more material on the learning process of a given student when the MMSE is used in several settings in the course curriculum. This incorporates undergraduates with an interest in a certain area, but before they declare their major, as well as advance students with a concentration or specialty related to the MMSE subject, or simply those who are interested in multi-media innovations in learning. In this manner compatibility of participant with content subject was not the highest criteria. Although participants were not recruited from based on major, the participants tended to self-select based on a personal interest in the subject of the MMSE.

6.2 Participant Profile
Of the nine participants, one third had prior experience in courses related to philosophy, or twentieth century art. 45% responded to broadcast e-mails from their department, 45 % responded to the flyers posted on campus, and 10% came from student referrals. One third had prior experience with CCNMTL and two thirds had no experience with the Center.
6.3 Exploring the Site

The first segment of the study allows the participants fifteen minutes to explore the site at their own discretion, in any order of interest or pattern they chose. The goal of this exercise is to determine if the visual presentation spawns a particular approach? What are preferences in traversing the site, and is there any association in the manner users combine the resources available to them?

The initial response to the site indicates it conveys a message of academic quality, deep content, and vast knowledge base. The colors are attractive, but several participants state concern about white text on black. The site’s heuristics attempt to focus the student on the core text. 50% of the participants indicate they initially spent time on the text. Of interest to designers is the means that people choose to traverse the site, 44% began with the resources section in the left frame, 34% used the text and key-word links, 22% followed the navigational buttons at the top of the primary window. While 75% reported they spend most of their time on the text and the other areas experience and equal amount of inquire, there was a specific order that people use when engaging the sit for the first time. 89% began with the text, 62% went to explanatory notes second, and 37% said they went to slide shows, third while 37% said they went to interviews third. This seems to indicate that students do concentrate on the core text, attempt to understand material they are unfamiliar with through the explanatory notes, and go to sensory material that appeals to them either auditory or visual for further expansion on the spine text. Of significant interest is every participant reported not getting to all areas; it was fairly even across study sources, interviews, films biography notes, and slide show as to which area was left unexplored.

Overall response to the site was very positive:

“The site is amazing- a researchers dream come true”(C); “I like the weave of the material with the core text”(G); “Some of the material is a distraction from the study, but it stays in the topic” (I).

The age spectrum varied, 34% in the traditional undergraduate population, 22% representing conventional graduate age students, and 44% mature students engaged in ongoing academic study. Fig. 19

Fig.19

The MMSE uses an index approach to locating additional resource material to support the spine text. The Participants indicated 22% use an index search several times per week, 56% occasionally and 11% represent the extreme of never or everyday. As a group the 57% of the participants spent ten or more hours on the Internet per week, 11% stated they use it zero to one hour/week and the same percentage uses it tow to four hours per week. On the whole the group is Internet literate accustomed to viewing hypertext media, searching for material, using links, and navigating a site. As a significant finding in visual presentation 39% indicate content and depth of information motivate them to explore a site, and 23% indicate they are guided by headlines and frame topics.
6.4 Sample Research Question

The second section of the study provided a simulation of a research question. In this phase participants were given twenty-five minutes to answer the question. They were not asked to write an answer, but to write down their method of inquiry and the location they visited on the site to search for evidence to support their argument. In this manner this study intends to understand how they use the resources in a working environment, and what type of cognitive process they bring to the task. How does this type of processing merge with the presentation of multi-media?

6.5 User Behavior

In terms of user behavior, the Danto Study shows 33% follow keyword links to find source material, 11% rely on searching the resources section, and 55% combine the use of navigational links, key word links, and resource section index search. This groups is sensitive to sensory material, 30% listed to the duration of the interviews from 2-3 minutes, and 30% never listened to any interviews at all, the remaining 40% spent longer than 3 minutes listening to interviews. In using the features demonstrated by Mr. Frost, 37.5% looked up artwork as a comparison to another piece of art. Of those who did not, some mentioned they looked at the art, but preferred one at a time, or to look at them in sequence.

Participant evaluation of the subject support through contextual learning indicates that 63% found the availability of resources increased their rate of assimilated the key concepts in Danto’s Essay. Participants ranked the value of each component on a scale of of 1-5 with five being the highest (Likert scale). The results are as shown at the left.

Fig.20
(For specific rankings on components of the “Danto’s Artworld” MMSE see footnotes).

Of the participants 62.5% found viewing the resources simultaneously a very important quality of learning the core text. In relationship to a conventional study environment 74% stated that is more effective. The highest order of priority of the benefits found to be most valuable by the participants were in the following areas:

- 88% It saves time. I don’t have to search for material in other resources?
- 77% I can look at the reference material while still concentrating on the essay.
- 77% I can follow one chain of thought through many mediums (related history, resources, interviews, and deconstruction of the body of the text)?
- 77% I explore other topics in the reference section I wouldn’t have thought about, if I use conventional study sources.
- 66% I enjoyed learning how the history of thought behind the philosophy of aesthetics evolves.
- 55% I understand the context of the work in greater depth.

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20 Explanatory Notes 4.20
Biographies 3.55
Art Work 3.33
Films 3.20
Interviews 3.00
Study Sources 2.75
Based on their experience with “Danto’s Artworld,” 88% of participants said they would like to see more MMSE as part of course support in required readings. 50% of participants said they would like to see two to three MMSE in each course, and 37.5% wanted to see four to five MMSE available per course. When asked what their criteria should be for this type of multi-media support, the answers ranged from: a topic with depth in content, cross disciplines; literature or complicated texts; history, music, architecture; science, math, anything with visual focus or 3-D graphics. “Danto’s Artworld” made such an impression that 66% of the participants said they would remember to return to the site for further inquire when faced with a question on philosophy of aesthetics, twentieth century art, or a twentieth century artist.

6.6.0 Site Presentation
The study investigates the overall impression and effect of the site presentation on the ability of the participant to understand the content and information architecture.

6.6.1.0 Layout and Navigation
Site layout interacts with navigation. It presumes relatedness of headings by proximity, grouping, or color coding. Similar access mechanisms train the user into the correct mode to use the site. A sudden shift of method, or an unfamiliar location for information makes the site awkward and frustrating for the user. This section gives specific attention to each visual field and visual cue utilized in “Danto’s Artworld.”

6.6.1.1 Resource Window
Previous generations of the MMSE carried four tabs over the resource area (see Fig. 1). This seems to make it clear that this frame has information unique to the window. “Danto’s Artworld” attempts to simplify this by titling the resource window as “index” indicating the type of material to be found in this frame, and a secondary label of “search” maintaining the association of looking for further information. Location for additional site data not related to the primary text have been moved to the lower part of the screen for “about,” “help,” and “feedback.”

However, 71% of participants did not understand the graphic (Fig. 21) to indicate the resources section. A further point of confusion occurs when a user clicks on the index graphic. In the initial presentation mode, the window is active displaying the drop-down menu boxes. The “index” graphic will operate to close the display once the resource frame has displayed a reference. The confusion for the user takes place because their initial click, indicates this graphic is not operable, therefore, they do not use it to close the window presuming it is an inactive button. 34.5% indicated its placement was confusing, and only the search button was clear.

As a group the users stated the graphic (Fig. 22) was better descriptor that this frame had additional information. Based on the color and the fact that all other heading controlled the primary viewing window, they users initially believed the “annotation view box” also referred to advancing and retreating the primary window. This is not surprising as color and similar shape lead the mind to group and cluster information that is similar. In absence of a different visual cue the 84.5% of the users did not see the “annotation view box” as belonging to the resource section. Only upon experimentation did they discover it did not link to the primary window. And this same experimentation did not lead them to understand it affected the resource window. In addition the location at the bottom was not clear for the users; “forward and backward” buttons are generally

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21 In a separate study on an MMSE if a different subject matter respondents stated site criteria similar to the nature of the subject site they had examined. This represents a perception by the participants that suitable subject is determined by the example they have viewed. Participants had a difficult time envisioning a use other than demonstrated.
placed near the top. As a group they preferred this icon to be the label for the resources section with the addition of the search button in the icon frame. In lieu of moving the location, they want the color to match the scheme of the resources area.

6.6.1.2 Internal and External Labeling

The biggest problem with the resources section in “Danto’s Artworld” was the lack of consistency of labeling of resource materials. For example the term media as a descriptor in the reference section actually refers to three possible modes: interviews (by video), film (by video) and still art (under slideshow). Many users did not know what “slide show” meant. Unless they clicked on media, they had no idea what additional type of resource was available. Another illustration was the reference term ‘note,’ this could mean a biography, a reference in ‘explanatory notes’ a reference from the encyclopedia, a footnote in Danto’s work, or an editorial comment by Michael Kelly. These variable possibilities should be distinguished. “Resources” can mean other essays under “Study Sources a part of the site, or outside links to sites on the World Wide Web. The only clear reference term was “keywords,” which refers to any keyword cross referenced in the site. Users found the lack of consistency of surface labels on the navigations buttons to the interior reference labels confusing. As a whole 57% of the group did not understand the labeling in the resource area.

6.6.1.3 Readability of the Resource Window

Readability of the resource area resulted with 88% of participants saying they found it easy or had no problem reading in the narrow space. 66% said they had no problem reading it simultaneously next to the primary viewing window. Most indicated the found it easy to switch between text and cross-reference. Those who did not like the window open found it distracting to go back to the primary text. They prefer an option to close the resource section (which is available by clicking the index tab, if they had understood this) or by having the box disappear and allowing the primary viewing window to enlarge on the display screen. When asked if the color-coding of the keywords helped, 62% said it didn’t make a difference. However research indicates color coordination facilitates grouping of ideas or meaning. This operative factor takes places at a sub-conscious level; therefore it may not be apparent that this was of value. On the other hand, since the resource area automatically opens up there is no need to process categorization of the keyword into the resource area, so perhaps the hyper-link feature bypasses the need for optical coordination for synchronous association.

6.6.2 Multi-Media Controls

Only 37.5% of the participants used the compare/contrast feature of the slide show. It may not be clear whether this is a preference or if they did not remember how to use the feature. 58% of the participants stated they would like to have running times available on the interview and film clips in order to budget their time. Michael Kelly as the site author expressed the desire to allow the
entire interview clips to run consecutively without interruption as an optional feature. Based on the user-group study it appears they the ability to create options for use of the resources is highly desirable. Users do not approach the resources the same, and perhaps under different circumstances may appreciate the multi-tasking input, allowing the interview to run continuously, while investigating other aspects of the site (as found with participants in the UDHR user group).

6.6.3. Icons

When asked if the participants understood the red “i” the evaluator received a mixed results with answer that range from “more or less”; “yes”; “no”; or “somewhat”. When asked to compare the with specific icons, 42.5% preferred the specific icon, 28.5% preferred to combine them, and 28.5% like the original red “i” icon. The overall preference was to use the red “i” in the margin of the text, and have a rollover menu display a specific icon and the number of listings of additional reference available for the passage. This method allows the user to see in advance what might be available before going to the reference. It also reduces the space taken up in the resource window by listing all the references. If the user clicks on the icon during the rollover preview, that listing is automatically displayed. This reduces the time in the decision making process.

6.6.4. Readability

In terms of spacing, of the text 43% indicated there was sufficient leading between the lines to focus on the sentences, 28% said it was not sufficient, and 49% said they didn’t know or did not answer. When asked if they found the text easy to read, 22% reported “yes,” 88% reported “no” or “not sure.” When asked if they had any trouble reading white text on a black background 80% reported “yes”, and 60% reported experiencing eye-fatigue. The general consensus is that aesthetically it is pleasing, but for long term viewing the reverse contrast of white on black may be fatiguing.

D: “Beautiful to look at, But I think there is a real problem with white text on black background from the point of accessibility for people with visual disabilities. The black background really creates a dissonance in viewing something. My eyes really had to adjust to that, and I sort of had to overcome my own mental prejudice against white text on black background. It’s a beautiful color scheme and I think it is beautifully designed but its just the readability that my concern. Really I often had to look away, I got up a few times because of the strain of reading white on black.”

C: “It’s a very busy site. It’s overwhelming all with the amount of options that it offers. Everything is so strong and attention getting. From the viewpoint of a student to grab something and get out - It’s fine. But what is it designed for? If I were going to surf a long time and utilize all the resources I would definitely experience that overwhelming and burned-out and definitely eye fatigue.”

F: “I think its ironic that this is such a sophisticated tremendously powerful system, which invites your to use it, I won’t say a long time, but I could easily spend ten hours on this. But, ten hours of this color scheme would double the fatigue factor.”

7.0 Discussion

The evaluation conducted for “Danto’s Artworld” differed from the customary evaluation process conducted by CCNMTL. In the past formative evaluation consisted of a ‘feedback’ process by the site author the faculty partner with CCNMT and perhaps one to three students with sufficient background in the subject of the MMSE (Simpson). This process is common in the development stage of multi-media guiding the design team to meet heuristics established by the faculty partner and CCNMTL. The next phase of evaluation usually takes place in the classroom as a summative evaluation.
The evaluation for “Danto’s Artworld” evaluation occurs Post-Alpha and Pre-Beta. This allowed
the examination of both intrinsic aspects of the MMSE that are subject independent and specific
application of study resources to support the academics of the MMSE core text. The phase of
evaluation provides certain benefits not found in another cycle: 1) It offers the opportunity to
isolate behavior of students engaged in the study process, which cannot be observed in their
personal study environment; 2) It also allows for immediate feedback on the site which may not be
recalled in a summative evaluation with a questionnaire distributed at the end of the semester; 3) it
identifies normative design factors based on cognitive processing; 4) it isolates these variable from
additional factors which occlude visibility when integrated in a learning context. When learning
context may be examined one may separate teaching style, integration with course material,
introduction to the media, and student interaction both inside and outside the classroom. In this
manner it may be easier to attribute benefits or detriments either to the media project, its context, or
how they intersect.

The “Danto’s Artworld” evaluation consists of a user group of seven participants, individual
sessions by two persons with specific observation, and the initiation of faculty interviews. The
following is a summary of findings in relation to the initial Evaluation Goals.

7.1 Goal One: Engaging the MMSE
In reference to the MMSE as a subject independent presentation platform the study investigated
perceptive sign and visual cognition, resulting in the identification of user behavior and subsequent
definition of user profiles.

7.1.1 Perception
The following factors were used to help identify user behavior and response: Visual cognition
prioritizes color, shape and location. Color acts as the operator for grouping and clustering of
objects. Color applies meaning through associative memory. Shape establishes the object in
long-term memory according to semiotic understanding and helps establish a classification system,
Location of visual cues creates a mental map of the visual presentation of the information.

7.1.2 Behavior
The random exploration period offered the distinction of certain behaviors users brought to the
MMSE, based on their own cognitive style, learning style, and learning orientation, “Learning
styles reflect a learner's position on a continuum running between extreme traits such as holistic
and analytic, verbal and spatial, reflective and impulsive, or exploratory and passive” (Dillon and
Gabbard, 1998, 15). Further, Shute noted that “When learner style is correctly matched to learning
environment, learner performance may increase, but a systematic manipulation of this variable a
priori would lend stronger support to the exploratory behavior dynamic” (1993).

Based on the group and individual observation and user responses one can conclude there are four
behaviors uses to traverse the material in the MMSE.

1) **Text Driven** – this person advances through the site relying upon the spine, or the core
text. They leave the primary viewing window only when they encounter a keyword link
that may prove of interest to them.

2) **Navigation Buttons** – this person selects anything that is clickable. In essence
establishing a mental map of possible sources of information, but never going past the
surface.
3) **Sequential** – this person advances through the site somewhat like one is reading a book. They maintain a left to right and top to bottom sequence. This style was found more commonly in conjunction with older participants.

4) **Super Sequential** – this person is similar to the last category, however, when they enter a domain it is explored fully before advancing to another domain.

In terms of method of link access 60% of the participants use both the keywords in the primary text and the index process of the resource area, 25% use keywords only, 5% use the index based resource area exclusively to traverse the range of material in the MMSE. This emphasizes the need for the navigation structure to mirror the underlying information architecture, as the majority of users will not expect to find supplementary material unless it is visible in the single display.\(^2\)

Quite interesting was the comparison between the range of resources found by the participants during the exploratory session and the research session. Although participants were given more time on the research section, participants did not expand beyond their previous range of resources they had encountered. In other words if a participant initially explored 40% of the site, they used this knowledge base to answer their research question. A participant who explored 80% of the site also used that range to answer their research question. This finding fits with Jonassen and Wang (1993) who report “significant differences between the cognitive style groups in terms of number of modules visited and completed and time spent in the training sessions.” This finding emphasizes the need for navigation and site layout to be as transparent and intuitive as possible. A good design allows for the content to be available to more students with varying cognitive styles.

**7.13 Profiles**

“Deep and shallow processing”\(^2\) refers to the degree of structural or surface analysis and metacognition learners typically manifest in response to new information. Learners can be divided into deep processors who have learning strategies that relate and structure information actively and surface processors whose learning strategies are more passive, usually centered around memorization and rehearsal of information” (Beishuizen, Stoutjesdijk, and van Putten, 1994) User profiles derived from the exploration process also reflect the typical learning orientation of person prefers. Although a pre-survey was not administered in advance of the study, their sequence, duration, and approach reflect learning orientation categories. As such the profiles are as follows:

\[^2\] A contrary opinion is found with the study conducted by Liu and Reed, “Field Dependent learners used the various features of the courseware significantly more than Field Independent or field-mixed learners, but no significant results on [learning] outcome were observed for the relationship between learning style group and media access or use of learning aids, dictionary, or background information” (liu and Reed 1994)

\[^2\] The authors hypothesized that surface processors would make more use of the available text-related guiding tools in their hypermedia assignment, while deep processors were expected to use the map function to select text units in the hypermedia. Forty-two students who had been given an ILS evaluation took part in this experiment using the materials from the first experiment. The authors reported that students who combined self– regulation with deep processing and students who combined external regulation with surface processing performed better than did students with complementary combinations of regulation style and processing style. The results of both experiments were interpreted as confirming that surface processors are less comfortable in the hypermedia reading environment. Beishuizen, Stoutjesdijk, and van Putten (1994)

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1) **Exploratory** - User is investigative for their own purposes, not swayed the visual presentation. They stay in motion to create a mental landscape of the resources. User scanning the resources and the text and for bias based on their own knowledge and outside references. User is exploratory by nature gathers scope and context with a range of resources.

2) **Topic Oriented** – This user is motivated by a subject or topic of interest to themselves. They scan the text for paragraph heading that fit their interest. They skim through the indexes for familiar topics or one that intrigues them. And, they use the keyword search to match their knowledge against the material in the site. Once satisfied they look again at overall site organization.

3) **Location specific** – The user examines every navigation button, establishing a sense of filing or blocking of data. The user does not go deep, and remains on the surface only. Their intent is to establish an understanding of the scope of material in preparation of an inquiry.

The research portion of the study allowed the examination of the mental process a participant brought to the task of researching a typical inquiry. In this manner, they have combined their cognitive style with their learning orientation.

These profiles fall into six groups.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Mental Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparers</strong> – Look through the site introduction for content availability and structure.</td>
<td>Conceive their approach, then apply critical thinking to the material available.</td>
</tr>
<tr>
<td><strong>Scanners</strong>- Scan the core text.</td>
<td>Examine the text for intertextual references and evaluate definitions.</td>
</tr>
<tr>
<td><strong>Resources</strong>- Survey resource for related material to the inquiry.</td>
<td>Identify a theory or cross-arguments, utilize a case study to elaborate theory.</td>
</tr>
<tr>
<td><strong>People</strong>- Investigate the Biographies for persons of influence.</td>
<td>Build argument based on intervention or invention of key persons.</td>
</tr>
<tr>
<td><strong>Topic Oriented</strong> – Look for a common topic via headlines, titles, and index.</td>
<td>Locate everything related to the topic.</td>
</tr>
<tr>
<td><strong>Query Type</strong>- Check all areas of the subject both within and outside of the site.</td>
<td>Create a chronology of significant factors related to the topic. Develop an argument from this assemblage of facts.</td>
</tr>
</tbody>
</table>

Similar to the topic oriented, they follow the subject throughout the site, but check the material against their own knowledge base and the information outside the site.
In a study conducted by Lin and Davidson the question posed, What factors prevail in learning outcome: cognitive style, learning style, learning orientation? And, how does interaction with multi-media impact these variables? “Cognitive style construct of field dependence (FD) and field independence (FI), generally considered to represent differences in preference to attend to specific issues or to rely on context. Lin and Davidson (1994) Consistent with other findings, FI learners outperformed FD learners, regardless of environment. The authors observed no difference in performance between learners with the same cognitive styles as a function of linking structure and reported that the "performance of these subjects cannot be predicted by the interaction of linking structure types and cognitive style" (p. 459). Clearly the MMSE is as effective as the body of knowledge and critical thinking the student brings to the inquiry. From the findings of Lin and Davidson the FI who rely on context should benefit greatly from the multiple resource platform offered by the MMSE. FD learners may continue their approach through traditional study methods, but FI will gain rapid value from the MMSE.

7.2 Goal Two: The Effectiveness of the MMSE

The second objective of the study is to determine the effectiveness of the MMSE format in presenting a subject. It is an assessment of the use of hyperlink technology to a variety of supporting resources for the purpose of an enriched understanding of the core text, Arthur C. Danto’s “The Art World.” Do these resources create a context for the essay? How do student create the context in their mind for reference to the discussion taking place in the essay? How do the students utilize the resources, and are there identifiable patterns for this exchange? Do multiple resources stimulate other approaches during the inquiry process?

The response from the study participants is very positive. From their comments they find the site to be of great depth and wealth of information. The single viewing style is a new convention, however participants readily adapted to this format: “I think it’s a great system. It’s a style of learning that you have to become accustomed, like learning any new skill. I had the feeling it was much more efficient and much more fun than the traditional style” (F).24 The multiple resource availability without leaving the primary text provided the environment for rapid association of material to the arguments at hand, “It’s a wonderful way of weaving between core text, annotations, and pictures”(D). Hypermedia studies indicate that traditional vs. Hyperlink formats do not impact comprehension or approach, these factors are natural to the student. However the wealth of information available due to the rapidity of accessing more data in hypermedia format, and the rate assimilation to the topic does increase with multi-media.

7.2.1 Text vs. Resources

The heuristics of the site dictate the focus of attention on the spine or core text, with supplementary material available for enriched comprehension of the primary text. The evidence from the study indicates that participants spent a substantial amount of time on the text. The following table indicates the percentage of all users who reported spending more time in a particular resource. The variation between resources represents a preference of learning style based on preferred stimulus and interaction. The multiple sensory possibilities of Danto’s “Art World” offer supplementary understanding for a variety of perceptive modes.

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24 “The authors reported no significant differences in total time to conduct searches in “Perseus,”or on paper, and, more important, they reported no significant difference between students on traditional measures of critical thinking (essays and translations). However, the number of citations present in student essays was significantly greater for students using Perseus.” (Marchionini and Crane, 1994).
Areas Participants Remained

<table>
<thead>
<tr>
<th>Area</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>66%</td>
</tr>
<tr>
<td>Interviews/Film</td>
<td>44%</td>
</tr>
<tr>
<td>Bios</td>
<td>22%</td>
</tr>
<tr>
<td>Notes</td>
<td>22%</td>
</tr>
<tr>
<td>Slide show</td>
<td>22%</td>
</tr>
</tbody>
</table>

7.2.2 Comprehension of the Core Text

Participants indicated this single viewing platform with multiple resources aided them not in understanding, but in allowing them to focus on the concepts, meanings, and logic of the argument. Participants indicated that their understanding came from their ability to comprehend, the value from the MMSE structure offered them the freedom quickly fix in their mind the interpretation of the author,25 so they could carry on with the discourse within the essay, “Indeed, some researchers (e.g., Smith, 1994) have argued that hypermedia can model the knowledge structures of experts in a manner that makes their assimilation by learners more likely” (Dillon Gabbard, 1998, 9). Participants explained that the associative links embedded by the presentation style gave them the framework to dissect the argument and build counter arguments. They did not have to build these relationships themselves, “It is mapped out, so I can concentrate on understanding not the relations”(B).

It is important to note that studies of comprehension26 through hypermedia indicate that text based material offered no immediate advantage. However, when the subject of learning contained visual objects, hypermedia presented a benefit, “The researchers attributed their findings to the functionality of rapid access in hypermedia, which enabled learners to develop a better sense of similarities and differences between objects” (Psotka, Kerst, and Westerman, 1993).27 “Danto’s Artworld” incorporates text and a broad range of visual material. Reports from participant indicate this combination readily available had an impact on learning performance, “An example in the text is Kandinsky, the switch of styles from mimetic and representational to abstract. So by clicking on the name Kandinsky it brought me to the side bar. I could go into the images from there. It was really helpful, because I could see the progression of style”(C).

7.2.3. Pattern for the use of Resources

One aspect of this study investigates how participants use the resources. A significant finding appears with the use of audio/visual material. The participants in this groups seemed to either not use interviews or films, or if they did, they paused to listen for its duration. This finding is a

25 “The authors observed that, ‘as in Experiment 1, control group subjects were better able to recall information, as they were less distracted by the structural knowledge activities. Neither structural strategy (generative or pop-up) produced any increase in ‘structural knowledge' (p. 5), Jonassen and Wang 1993” (Dillon Gabbard 1998, 10)

26 “Hypermedia being suitable mainly for a limited range of tasks involving substantial searching, or manipulation and comparison of visual detail where overlaying of images is important. In short, the evidence does not support the use of most hypermedia applications where the goal is to increase learner comprehension (however measured). (Dillon Gabbard, 1998,10).

27 In visual categorization and discrimination learning, the use of animation and superimposition made possible in hypermedia clearly has an important impact on learner performance. (Psotka, Kerst, and Westerman ,1993).
These values appear in the same percentage, and the same sequence in both studies.\textsuperscript{28} It seems that the subject matter and the type of participant drawn to the subject matter will affect how the resources will be used.

\textbf{Duration of Audio/Video Use}

<table>
<thead>
<tr>
<th>Duration</th>
<th>% of Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>33%</td>
</tr>
<tr>
<td>30 seconds</td>
<td>0%</td>
</tr>
<tr>
<td>1 min</td>
<td>0%</td>
</tr>
<tr>
<td>2-3 min</td>
<td>66%</td>
</tr>
<tr>
<td>10 –20 min</td>
<td>0%</td>
</tr>
</tbody>
</table>

Fig. 25

7.2.3 \textit{Expert Representation of Knowledge Domain}

During the discussion session another phenomenon of the MMSE manifest through participants comments. Participants of the undergraduate level particularly benefited from the range of material available through the resources. Their comments centered on the scope of context, and the means of associating material to the essay. These responses concur with Jonassen and Wang (1993) “argued that hypermedia's support of structural mapping would lend itself ideally to helping novices acquire an expert's representation of a subject domain (a view termed the "naïve associationist" model of hypermedia by Dillon (1996). Upper level students comments discussed the depth of information and precision available through the references.

7.3 \textit{Goal Three: Teaching Modifications}

The interviewing of Faculty did not progress as desired. Faculty members contribute their time voluntarily. For the most part faculty who shared their views indicated the MMSE did not change their approach to teaching, nor particularly course preparation. They did indicate the URL would be listed on the syllabus as reading. However one faculty member did indicate that they would use the site as method to prepare for lectures to stimulate a new approach to a familiar topic, or to include materials that may be located on the site, which support the essay’s argument or contradict it.

8.0 \textbf{Conclusion}

The MMSE does operate subject independent in terms of the method a user approaches the site, and it does carry a common pattern for user behavior. It does meet the heuristics for a focused attention on the core text. However the resources are used differently based on the learning style of the student. The student focuses initially on the range of content available as determined by navigational cues such as headings, titles, and sub-menus. Findings indicate that navigation must

\textsuperscript{28} The standard across the two MMSE studies stems from the value of the hyperlink format in the single view platform. These values appear in the same percentage, and the same sequence in both studies.

- 88% It saves time. I don’t have to search for material in other resources?
- 77% I can look at the reference material while still concentrating on the essay.
- 77% I can follow one chain of thought through many mediums (related history, resources, interviews, and deconstruction of the body of the text)?
- 77% I explore other topics in the reference section I wouldn’t have thought about, if I use conventional study sources.
- 66% I enjoyed learning how the history of thought behind the philosophy of aesthetics evolves.
- 55% I understand the context of the work in greater depth
match information architecture for full range of resources to be visible to potential users. Users get lost in the depth of information or in areas unfamiliar to them based on prior Internet experience. Common Internet terminology such as “slide show” which is an application is not always understood by the user. A term as “art gallery” would be more familiar. Prior experience with extensive indexing systems is not necessary as the user quickly learns to use the menu systems. Special features such as the compare/contrast of artwork are often forgotten after a presentation, or not used if there has not been a prior explanation. The overall site layout works for most participants, confusing issues are the new convention of combining the resource window with the primary text. The global format is the most effective feature allowing individual adaptation to the material based on learning style, learning orientation, and cognitive style. The MMSE is an effective method to support the close examination of key text based on reports from the participants. Its primary advantage is the rapidity of access to material to enhance the comprehension of the core text.

Further research must be conducted in reference to learning environment, and teaching modification. This most likely will take place in the Spring semester of 2002 when the site will be used in a classroom setting. Initial results from the participant indicate that Danto’s essay is indeed illuminated by the contextual information assembled in the site. However, actual learning performance must be measured through an additional study, which will control for prior knowledge, writing capacity, and equality of student capability.

\[ ^{1} \text{"Arthur C. Danto": Emeritus Johnsonian Professor of Philosophy; Art critic for the weekly magazine The Nation. B.A., Wayne State University (1948); M.A., Columbia University (1949); Ph.D., Columbia University (1952);} \]

\textbf{Areas of Specialization:} Thought, Feeling, Philosophy of Art, Theory of Representations, Philosophical Psychology, Hegel's Aesthetics, Merleau-Ponty, Schopenhauer.

Professor Danto has been with Columbia since 1951, a professor since 1966. He has been the recipient of many fellowships and grants including two Guggenheims, ACLS, and Fulbright. Professor Danto has served as Vice-President and President of the American Philosophical Association, as well as President of the American Society for Aesthetics. He is the author of numerous books, including Nietzsche as Philosopher, Mysticism and Morality, The Transfiguration of the Commonplace, Narration and Knowledge, Connections to the World: The Basic Concepts of Philosophy, and Encounters and Reflections: Art in the Historical Present, a collection of art criticism which won the National Book Critics Circle Prize for Criticism, 1990. His most recent book is Embodied Meanings: Critical Essays and Aesthetic Meditations. Art critic for The Nation, he
has also published numerous articles in other journals. In addition, he is an editor of the *Journal of Philosophy* and consulting editor for various other publications." (http://www.columbia.edu/cu/philosophy/deptinfo/text/deptinfo.html)

"He was born in Ann Arbor, Michigan, and raised in Detroit. After volunteering for the Army in 1942, he served in Europe during World War II. After being discharged in 1945, Danto studied art and history at Wayne University (now Wayne State University) in Detroit, finishing his degree in two years. Because he was entitled to two more years of study under the G.I. Bill, he decided to go to graduate school in New York City while continuing to make art. Enrolling in 1948 at Columbia University, Danto earned a master's degree in philosophy a year later. He spent the following year studying philosophy on a Fulbright fellowship at the University of Paris.

In 1951, Danto joined the Columbia faculty as an instructor in philosophy, a position he held until 1954, when he was made an assistant professor. He was promoted to associate professor in 1959 and to full professor in 1966. He has been a visiting lecturer or professor at Princeton University, the University of California at Santa Barbara, Catholic University of America, and the University of California at San Diego. In 1975, he was named Johnsonian Professor of Philosophy. He retired from Columbia University (and was made emeritus professor there) in 1992. Danto began writing his art criticism for *The Nation* in 1984.

Danto's career at Columbia was marked from the beginning by his devotion to the principles and methods of Anglo-American analytic philosophy, a tradition that approaches philosophical questions by closely analyzing the precise workings of everyday language. His wide-ranging works in this tradition include *Analytical Philosophy of History* (1965), *Analytical Philosophy of Knowledge* (1968), *Analytical Philosophy of Action* (1973), and a volume of essays which he co-edited (with Columbia professor Sidney Morgenbesser) on *Philosophy of Science* (1960).

These works are intermixed with others on philosophers and topics less common among analytic philosophers, namely, Nietzsche (as *Philosopher 1965*), Jean-Paul Sartre (1975), and *Mysticism and Morality: Oriental Thought and Moral Philosophy* (1972). Danto's philosophy of art received its fullest elaboration in his 1981 book *The Transfiguration of the Commonplace*, which attempted to give an essentialist definition of art: to be an artwork, something must have meaning and it must embody the meaning that it has. Danto expanded his philosophy of art in two later books, *The Philosophical Disenfranchisement of Art* (1987) and *After the End of Art* (1997), both of which discuss his controversial theory that the history of art reached its end around the time of Warhol's work in 1964. \`

Danto lives with his wife, the artist Barbara Westman, in New York City." Adapted from Current Biography Yearbook, 1995." (http://www.ccnmtl.columbia.edu/projects/mmt/danto/)

\[ii\] Michael Kelly; Managing Editor, *Journal of Philosophy*; Adjunct Associate Professor; Ph.D., Boston University (1986)

"*Areas of Specialization:* Aesthetics, Recent European Philosophy, Nietzsche.

Professor Kelly has been the Managing Editor of the *Journal of Philosophy* since 1987 and recently edited the *Encyclopedia of Aesthetics*, Oxford University Press, 1998. He teaches one course per semester, generally in recent European philosophy (Foucault, Habermas, Gadamer, et alia).

**Recent Books:**

**Recent Articles:**
The following is a transcript of the discussion on color:

G: Yes, I agree, I did have a little difficulty as well. It is definitely easier to read the other way, and the color will still stand out on the links whether it is a white background instead of black.

E: That’s me or my comment actually.

A: I’m not sure there’s a different reading of white on black. It’s just not useful to sit there too long because of eyestrain that I didn’t relate to the color scheme.

F: Now I hear it referred to I think it is an issue. I think it is harder to read white on black than black on white. I was struggling with absorbing the theory, which is basically the subject of this thing. And I thing part of it is the white on black. I think I was struggling with the content and how the content is presented . . . I definitely think there is a certain friction created by the color scheme.

E: I agree with everyone that the white on black should be reversed.

F: I think there is an issue here that has to do with art. When I go to a museum I get burned out within a half hour because of the energy coming off the wall. A lot of that has to do with color. This is a very nice piece of graphic art, but I thing there is a conflict there between usability and user friendly.

D: These colors are highly saturated. Saturated colors cause eye fatigue. This is well known in cognitive psychology, it’s in the book Human Factors.

6.3.3. Please look at the screen. This is another site under evaluation. (UDHR) What do you think of this color scheme and presentation?

D: Design professional.

Yes, I like it immediately pleasing. Very educationally, very formatted, structured. Definitely this is research and I can stay here a long time getting something that I need but it doesn’t look like something that is a lot of fun.

C: But its all about priority, what is it designed to do? Is it designed for research and use for a long time and for a standard sort of tool. Yeah, That’s user friendly for research . . . That’s the sort of message it conveys.