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A STUDY IN THE ELECTRONIC PORTFOLIO AND TEACHER CERTIFICATION

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Abstract

This thesis documents the process of converting a conventional educator’s portfolio into an interactive electronic educator’s portfolio. This thesis will specifically address the needs of the inservice K-12 educator as they embark on an electronic portfolio journey. Currently no literature exists which addresses the process of creating an electronic portfolio specifically for the inservice educator. The majority of the current literature addresses the needs of the preservice educator. This body of work is presented to enhance effective communication by emphasizing the important role design plays in the process of creating an electronic portfolio. Also, offering the K-12 inservice educator guidance in the form of an interactive workbook. The workbook can be used on an individual basis or as a guide for a series of workshops. (See Appendix H) The workbook portion of this thesis uses an interactive format to demonstrate the essential fundamentals of design.

This thesis will give the inservice educator a comprehensive understanding of the entire process, not just a tips and tricks session to assist with design. An electronic portfolio filled with content only that pays no attention to design, usability, functionality, or target audience, would not be as effective. Content only produces a product, design produces an experience for the user. Design helps the user to better understand the message(s) of the portfolio. Design organizes, unifies, and adds interest to the overall body of work. Design mimics the personality of the creator and adds a professional quality. Design empowers!

The documentation can be used as a reference for K-12 educators as they are given options to traditional assessment practices. The electronic portfolio is an alternative to the linear format of the traditional portfolio. Because educators can now apply for state certification via the electronic portfolio this thesis is a valuable tool to assist in that process.
This thesis is meant to guide the K-12 educator through the process of creating a successful electronic portfolio that uses design to communicate his/her ideas, knowledge, and growth clearly and effectively.
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Part 1
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Introduction

Everyone, particularly professionals, must learn to use the ever increasing technology of this age to compete and excel in their respective fields. The teacher certification process is no exception. In order to retain their jobs, K-12 educators must seek state certification. Certification keeps educators abreast of the latest advancements in their fields. The electronic portfolio has become an option for certification. Certification consists of a number of standards per discipline that each educator must show a competency in to receive approval from the certification committee. (See Appendix A) The majority of educators being certified are using a conventional portfolio format to document evidence of their competencies. Since the portfolio serves as a medium to document the educator’s growth, they are needlessly limiting their ability to demonstrate technological skills by using such an archaic presentation. The relatively flat format of a conventional portfolio can’t begin to demonstrate acquired skills inherent in an interactive multimedia presentation. Many educators are trying to embrace the electronic facet of the portfolio, but find the learning curve to be very steep. These educators have no knowledge of design or interactive basics, thus making an electronic portfolio seem like an overwhelming task.

This thesis will suggest a strategy for transforming the educator’s conventional linear portfolio to a non-linear electronic format. An emphasis in design, typography, and interactive basics will serve as the foundation for the transformation. The information will be structured in the format of an interactive workbook, chapters 3 and 4. The chapters can be used as an individual workbook or as a guide for a series of workshops. The goals of the interactive portion of this thesis are as follows:
1 allow the educator to become confident and comfortable, in an electronic environment, by providing an interactive workbook.

2 illustrate complex ideas by showing examples of design, type, and interactivity.

3 allow the educator to experiment before creating the electronic portfolio.

Chapter 5 illustrates a completed inservice educator’s electronic portfolio. This electronic portfolio would serve the purpose of assessment by using basic design and interactive skills to effectively communicate performance while specifically addressing the needs of the inservice educator.

**Statement of the problem**

In the last few years a trend in education has been to increase the use of technology in the classroom. “Both practicing and aspiring education professionals must be prepared to compete in and lead in the technologically rich and diverse environments in which they function.”¹ As education continues to undergo reform, the electronic portfolio is emerging as a viable part of the K-12 certification process. “The National Board for Professional Teaching Standards (NBPTS) (1989), for example, includes portfolios as part of its rigorous assessment process to recognize and reward accomplished teachers across the nation.”² Therefore, educators are being challenged to demonstrate competencies in the new technology. The majority of the literature on portfolios addresses

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the preservice teacher, content of the conventional portfolio, the evaluation process, and the argument of the electronic portfolio versus the traditional portfolio. What the professional literature has failed to address is how the inservice K-12 educator makes the electronic portfolio applicable, through effectively integrating the technology. Effective use of the technology should incorporate an understanding of the value of the aesthetic and design component of the portfolio, as well as the usability/functionality component of the portfolio. The technology should not become an obstacle to the content it is meant to complement. By addressing these concerns not only does the inservice K-12 educator benefit, but the entire education community.

**Purpose of the study**

The purpose of the study focuses on three important issues concerning electronic portfolios: one, to address the needs and concerns of the inservice K-12 educator; two, to promote the component of design in the portfolio process; and three, to help the educator clearly define the purpose of his/her portfolio by using Wolf’s assessment educator’s portfolio model.

The primary objective of this thesis is to provide the inservice educator with an interactive reference for creating an electronic portfolio that communicates effectively. Disadvantages to using advanced technology are the steep learning curve, choosing applicable software, and not having expertise in other areas that relate to the software of choice, like scanning, and using a digital camera. By providing the educator with time, training, and an outline, producing an electronic portfolio becomes achievable. Most inservice educators are not aware of the body of knowledge that is required to undertake a project like this. This thesis will outline the stages required for successfully developing an electronic portfolio. With the adaptation of the electronic portfolio as an assessment tool many inservice educators convey concerns of time to complete the portfolio,
receiving the necessary training, keeping the information current and the skill level of the assessors. Chapters 3 and 4 can be used as a workbook. This reference tool addresses these concerns, allowing educators to create in a comfortable training environment.

The secondary objective is elevating the design component. Design is one of the most important components of an interactive piece, yet it has been overlooked as an integral part of the educator’s electronic portfolio. Acquiring basic design skills allows the educator to unify his/her knowledge with technology. Design is necessary to help us function. For example, how are we able to find a street in an unfamiliar city? By using a map. The map is carefully designed to organize pathways of travel. By also focusing on the design of creating an electronic portfolio, the educator can create a map to accurately reflect the educator’s knowledge and skill level. This thesis is not proposing that all educators become graphic designers, but that they get a basic understanding of the foundation of design (principles and elements). This thesis is one way for the the K-12 educator to acquire basic design knowledge. Taking weekend seminars, workshops or an online course might also be helpful. By doing this, the level of design will become elevated in mainstream’s involvement in creating successful interactive pieces. Often K-12 educators are so overwhelmed by the technology that they ignore the relevance of design. By using basic design criteria, the quality, usability, and functionality of the portfolios can be improved, which in turn will help the audience decipher information more easily.

The last objective is to help the educator define the purpose of his/her electronic portfolio. Is it to serve the purpose of promotion, certification, self-assessment, or new employment? By clearly defining a purpose the educator can tailor the content more effectively. Another goal of this thesis is to assist the K-12 educator in the state certification process, which clearly defines the educa-
tor’s purpose. This thesis can address other purposes, but a clear understanding of the goal(s) can be very helpful when completing the task at hand.

**What is an educator’s portfolio?**

A portfolio is a compilation of a body of work reflecting an individual’s style, experience, and philosophy. Until recently this compilation of work has been displayed in a linear format, arranged either chronologically or thematically. The portfolio is not a new concept; it has always been a part of the applied and performing arts disciplines. Within the arts it is used as a resource to evaluate a designer’s skills. Recently other disciplines, like education, are exploring the potential uses of the portfolio as an instructional and assessment tool. So far the focus has been on creating the student portfolio. Because educators are also involved in an assessment process, it would be to their benefit to look at creating a professional portfolio.

A professional educator’s portfolio offers a promising solution for documentation of teaching effectiveness and professional growth (Seldin, 1991). In this way, tangible and concrete evidence can be provided to administrators responsible for staff evaluation. Portfolios also provide a personal sense of accomplishment and individual growth. Important for professional self-assessment, educators must seek new avenues for professional enrichment and teaching improvement.³

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The main difference between a professional educator’s portfolio and that of a designer is that in a designer’s portfolio the content is visual. The professional educator’s portfolio “…incorporates a written description of a teacher’s major strengths, teaching achievements, professional development activities, and professional career goals.”⁴ Some use the portfolio to evaluate and reward while others use it as a catalyst of communication for better teaching, learning, and understanding. The conventional portfolio has some disadvantages like space, editability, durability, cost and materials used. The professional educator’s portfolio should be updated on a yearly basis. As educators collect material and resources over time, space becomes an issue. Where should all of these materials be stored and who pays for the cost? The durability is an issue because of the number of assessors handling the portfolio. What materials are best to use?

**What is an electronic portfolio?**

The electronic portfolio incorporates today’s technology into the process of assessment. The portfolio is no longer limited to linear sequencing; non-linear capabilities are possible due to the advancements in the technology. The electronic portfolio helps to condense the materials into formats that are much more manageable like: CD-ROMs, disks, web sites etc. If the portfolios are in an electronic format it also allows for easier updating and maintenance of the material. Conventional portfolios usually are assembled in folders and binders, thus requiring hard copy printouts as a part of the updating process. The electronic portfolio eliminates the need for hard copies; all documentation is viewed on the computer screen. With the addition of the electronic

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component, the professional educator’s portfolio can utilize a more visual approach to support the written content. The visual and the written are unified in a technology driven environment.
Part 2

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The literature review can be divided into three categories: educator’s portfolios, design, and interactivity. The majority of the literature focuses on issues concerning the content of the educator’s portfolio. A problem not touched upon by the existing literature is the need for a basic understanding of design, interactivity and functionality. Also, how design relates to the educator’s purpose for creating an electronic portfolio. The existing literature did not reveal any concerns for demonstrating effective communication of content through the use of design or interactivity.

**Educator’s portfolios**

**Preservice educators**

The literature reveals that the electronic portfolio is currently being used in the hypertext and web-based formats, solely as a vehicle to assist preservice, undergraduate and K-12 instruction. The electronic portfolios primarily addressed courses in writing and the integration of the hypertext technology. Hawisher and Selfe identify three challenges of using technology to produce portfolios:

- **challenge #1**: the new technologies never stand still. They are constantly changing and as such require continuous learning on the part of teachers and those who would prepare English teaching professionals, challenge
- **#2**: technology is not evenly distributed across schools and universities or even within given educational settings. The rapid changes contribute to creating among us those with easy access to innovative development and those for whom access is difficult and sometimes nonexistent, challenge
#3: it is too easy to see computers and writing portfolios as “tools”.

We need instead to view them as richly embroidered artifacts of a culture, artifacts which ultimately embody the values and ideological directions of our society.5

In all cases the benefits of the electronic portfolio such as, its non-linear aspect, critical thinking, collaboration, incorporation of sound, motion, and video, and the involvement of the viewer, can be applied to the educator’s portfolio.

Contents

The contents of the educator’s portfolio are very consistent throughout the literature. Campbell writes, “it is apparent that engaging in the development of a portfolio organized around a set of goals or standards will greatly facilitate your growth and achievement in the goals identified.”6

Using standards based on the Interstate New Teacher Assessment and Support Consortium (INTASC) or the National Board for Professional Teaching Standards (NBPTS) can help to guide the educator in the portfolio process. (See Appendix A) The make up of the content consists of collection, reflection, and selection of criteria such as: teaching philosophy, knowledge of subject matter, achievements, professional development, strengths, and growth. The evidence of the criteria can be in the form of video, sound, photographs or written content. Some of the items to

5 Yancey, Kathleen Blake, and Irwin Weiser, Situating Portfolios: Four Perspectives. (Logan: Utah State University Press, 1997) 312-318.

include could be things like: a resume, lesson plans, transcripts, examples of student work, tests, photographs, videotapes, awards, case studies, community resources, letters of recommendation or evaluations.

**Purposes**

Wolf states that there are three basic types of educator’s portfolios: learning, assessment, and employment. It is important for the educator to clearly define the purpose of the portfolio. By defining a primary purpose the educator can concentrate on fulfilling the criteria.

Learning portfolios are structured to reflect a very personal side of the educator. The focus is on self-assessment and growth. The portfolio charts the progress of the educator as a learner. The learning portfolio has a very relaxed structure. Its contents can vary from teacher to teacher and has a tendency to reinforce the personality of the teacher. An example would be an individual growth plan.

The assessment portfolio on the other hand is structured to follow specific guidelines set by an educational body like a school district or state agency. Its focus is to measure performance and effectiveness for certification, or licensing. The contents are extremely structured and standardized. The National Board for Professional Teaching Standards (NBPTS) would fall into this category.

The employment portfolio’s structure falls some where between the above mentioned portfolios. Its main purpose is to inform prospective employers about the teacher’s qualifications for a specific position. The contents are usually stipulated by the employer.
Defining a purpose is crucial to creating a successful portfolio. Due to its highly structured nature the assessment portfolio will be the model used in this study.

**Design**

The literature specifically addressing the educator’s portfolio did not show any concern for a design component. On the other hand, the literature reviewed specifically addressing design professionals emphasized the importance of continuing to use the traditional principles and elements, taught in a design curricula, when creating an electronic piece. Even though the design is not being created for a print environment. The principles discussed were: balance, emphasis, unity, rhythm, proportion, and sequence. The elements discussed were: line, shape, texture, size, contrast, color, and space. The design process used for print can also be applied to the electronic format: define the problem, research, evaluate, present, produce, and follow up. Changing the media does not warrant changing the process. Design is definitely a critical part of the electronic portfolio process. Without design, effective communication is diminished.

**Interactivity**

“Why is interactivity so appealing? One answer might be that interactivity offers new opportunities of control to the audience. In older media such as film, the audience observes the story line but cannot alter the outcome of the story. In contrast, the audience of an interactive document can actively modify the speed, pacing, and order of information-exploring or ignoring information, depending on their individual inclination.”7 An overview of the interactivity literature reveals a

need for an understanding of the user, the environment, organization of the content, navigation, usability, and functionality of an interactive piece. In order to successfully create an interactive piece the process can be broken into disciplines of research, writing, graphic design, interface design, video/audio production and scripting. When these disciplines are tackled individually the process becomes much more manageable. Kristof and Satran (1995) write that the process should answer three questions: What is the product? How should it work? and How should it look? Graham on the other hand, breaks the process into five major steps: problem definition, fact finding, idea finding, project visualization, and implementation.

Interactivity transforms the conventional portfolio into a product of the technology age, allowing educators to compete and excel. Interactivity is a very powerful tool. If harnessed correctly it can turn a simple exercise like reading into an adventure, prompting the user to take part in the creative process.
Design basics

The components of an electronic portfolio can be divided into three categories, design, typography and interactivity. Before interactivity can be addressed it is necessary to grasp a basic understanding of some of the principles and elements used in design. Visual hierarchy, balance, unity, contrast, and color will be discussed in the design basics component. Typography will discuss basic terminology, classifications and legibility. Finally, interactive basics will explore choosing a program, images, sound, and video. At the end of each section, exercises can be completed to help the inservice educator comprehend the new information. The exercises should be done in sequence.

Visual hierarchy

Visual hierarchy is one of the most important components of design. It creates an order of importance which helps to guide the eye around the page. A strong visual hierarchy assists the user in deciphering content effectively. Without a clear hierarchy the information becomes confusing, tiring, boring, and frustrating.

Readers first see pages as large masses of shape and color, with foreground elements contrasted against the background field. Only secondly do they begin to pick out specific information, first from graphics if they are present, and only then do they start parsing the harder medium of text and begin to read individual words and phrases.8 (See Appendix B)

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When deciding on a hierarchy consider the following: the importance of each element in the message, the audience, and the environment of viewing.

The study of visual hierarchy is the study of the relationships of each part to the other parts and whole. When elements have similar characteristics, they have equality in the visual hierarchy, but when they have contrasting characteristics, their differences enable them to take dominant and subordinate positions in the composition.9

Utilizing contrast of the elements through size, shape, value, positioning, color and weight will help to reinforce the dominance and subordination in a composition.

**Balance**

There are two types of balance, symmetrical and asymmetrical. In a symmetrical composition the space is evenly divided, using the middle of the composition as a central location to place elements. Symmetrical design is very formal and is often seen as a static composition. If the composition calls for stasis and simplicity, then a symmetrically balanced composition is the answer. To achieve movement and drama within a composition an asymmetrical approach should be explored. An asymmetrical composition is much more flexible. In asymmetrical balance the weight of the elements are distributed evenly, not the items themselves. Asymmetrical balance usually has an odd number of different elements that are arranged in the composition to achieve the balance. *(See Appendix B)*

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Unity

Unity is the glue that holds the design together. When things are unified everything looks and feels as if it belongs. Repetition, the grid, and alignment are all ways to unify a design. Some unifying elements that can be used in an electronic portfolio are things such as: buttons, positioning of the elements, theme, color and overall consistency. Unity establishes the relationship of all the elements in the piece.

Repetition

Repeating certain elements within a design creates repetition and repetition creates consistency. Elements such as: typography, color, and navigation buttons can be repeated throughout to unify. Repetition can also be used to form patterns. Patterns can be used to organize, to create a mood, or establish meaning. Perhaps there is a need for an image in the design, repeating an element like line to produce a pattern creates unity and suggests stability. (See Appendix B

Grid

A grid is an underlying structure. When the grid is used properly effective communication is the result. The designer establishes a framework that organizes and unifies the design.

Gestalt data reveals that humans tend to prefer organized visual and verbal information. Grid systems allow the designer to satisfy viewer groups with respect to equilibrium, similarity, and continuation. They help the designer to avoid visual ambiguity.  

Grids help to establish logical positions for the placement of text and graphics. Grids can be simple or complex. The typographic grid will be the grid model used in this thesis. The typographic grid uses margins, columns, and gutters to establish a framework. (See Appendix B) Margins are boundaries in a composition, elements such as: page numbers, dates, volume numbers, titles or navigation buttons may be placed in the margin areas. Columns are vertical units that establish the width for text and images. Gutters separate the columns.

Alignment

Robin Williams (1994) states that everything in a composition should be aligned and should have a visual connection with other elements in the composition. When elements are aligned, implied lines are created making the composition stronger. Find the most dominant alignments and use those as a guide to establish a visual flow. Using too many different alignments in a composition can interfere with the communication of the message. Alignment should be used with both text and images. When working with text there are four basic alignments; flush left, flush right, centered, and justified. (See Appendix B) Studies have shown that for easier reading of paragraphs a flush left alignment is preferred. The implied line created on the left side of the paragraph helps to transition the eye from line to line.

Contrast

Contrast is a difference between elements. Without contrast the composition has a tendency to be flat and uninviting. Contrast helps the viewer move through the composition. The visual hierarchy is maintained because of the contrast. Contrast comes in many forms: size, shape, value, color, and direction. The difference in the opposing elements gives us the necessary control needed to establish organization and interest in the composition. (See Appendix B)
Color

Color can create a mood, identify objects, and help us to understand. For example, feeling blue, an apple is red, and green means go. Color can be created with light or pigment. To get a basic understanding of color, the properties of pigment will be discussed and can be applied to light. Most of us are very familiar with the six pigment color wheel: red, orange, yellow, green, blue, and violet (roygbv). Color can be broken down into three basic components: hue, value and intensity.

Hue, value, and intensity

Hue is the purity of the color, without black, white, or the addition of other colors. It’s basically how we give a color its name. Value is the lightness or darkness of a color. Value is achieved by adding black (shade) or white (tint) to the hue. Intensity is the brightness or dullness of a color. By adding gray to a hue the intensity is changed. (See Appendix B)

Color models

The basic six hue color wheel described above uses the subtractive color theory. Subtractive color works with pigment. “Subtractive color is viewed as a reflection off a surface. In subtractive color, all light waves except those containing the color we see are absorbed or subtracted by a surface. We see the color red when its corresponding wavelength is reflected to our eyes.”11 Another subtractive color model is the one used for offset printing. Cyan, magenta, and yellow are used as the primary colors. The additive color theory works with light. Computer monitors and your eyes use

this theory. When the three primary colors are equally mixed the result is white light, the absence of the three primaries is black.

*Color schemes*

When working with color it is essential to achieve color harmony. One way to do this is to use effective color combinations. To get a better understanding of color harmony the ROYGBV color wheel will be used. The color wheel can be divided into primary, secondary and tertiary colors. The primary colors are red, yellow, and blue, these colors create all the other colors on the wheel. No other colors can be mixed to create a primary. Secondary colors are created by mixing two of the primary colors creating orange, green, and violet. The subtractive six hue color wheel can be expanded upon by mixing a primary color with a secondary color, the result will be a tertiary color (yellow-green, blue-green, blue-violet, red-violet, red-orange, and yellow-orange).

*(See Appendix B)*

The new twelve hue color wheel sub divides the color relationships even further. Colors directly opposite on the wheel are called complementary (yellow and violet). When mixed in equal parts they neutralize each other creating gray. Analogous colors are two or more adjacent colors on the color wheel (yellow, yellow-green, and green). When white or black are added to a hue the result is a monochromatic color scheme.

*Design basics exercises*

Select one of your handouts, evaluate the handout based on the design basics criteria in this chapter. Next, redesign the handout based on your observations.
Typography basics

Before proceeding further review Appendix C. Appendix C discusses key terminology and anatomy. Typography can make or break a composition. Most non-designers see type as content only. Designers see type as an opportunity to correctly communicate a message to a specific audience. The design basics discussed earlier can be applied to typography. Typography in the electronic portfolio can be used as navigation buttons, headings, subheadings, body text and as a graphic image. The most important thing to remember about type is that it must be legible.

Choosing the right typeface(s)

With the outrageous number of type choices available today, picking a typeface can be an overwhelming experience. Being aware of all the current typefaces is an impossible task, and one that I would not recommend. Classifying helps to simplify the task of choosing the right typeface(s). The process can be simplified by evaluating typefaces based on similar characteristics such as: serifs, stroke weight, stress, contrast of strokes, and set width. This allows for grouping and the formation of classifications. Personality, feeling and mood begins to evolve when characteristics of a particular typeface are examined. Each of these classifications have strengths and weaknesses, which aids in determining the best possible solution. The three classifications to be discussed are: serif, sans serif, and decorative.

Serif

A serif is a horizontal stroke attached to the major strokes of a letter. Bracketed, hairline, wedge, and slab are different types of serifs. Serif typefaces usually have medium to high contrast between the strokes. Generally serif typefaces are easier to read when there are large amounts of text. When choosing a serif typeface pay special attention to, the x-height (larger is better), stress (the
closer to vertical the harder the body copy is to read), serif (slabs are heavy, hairlines can disappear), and contrast in strokes (high contrast will disappear, medium contrast is best). Times, Baskerville, Bodoni, and New Century Schoolbook are examples of serifs.

**Sans serif**

Sans serif means without serif. There is little to no contrast between the strokes of sans serif type. This conveys a sense of strength, confidence, and seriousness. Sans serifs usually have large x-heights, which helps with readability. Sans serifs are great to use for headlines, buttons, and signs. Helvetica, Futura, Gill Sans and Eurostile are examples of sans serifs.

**Decorative**

To simplify, all the remaining type will be put into this category. Script, calligraphic, blackletter, and grunge are other names within this category. Script, calligraphic, and blackletter are self explanatory and can be seen anywhere. Grunge on the other hand, is type that has been distorted on purpose and can be very difficult to read. It’s more of a personal typeface created using software like Macromedia Fontographer. Decorative typefaces should not be used for body copy and small type. They can add a nice contrast when used as a headline, or as a background element. Stencil, Nuptial, and Trixie are examples of decorative typefaces.

**Typography issues on-screen**

Text on-screen and text printed on paper should be treated differently. When using text on-screen, resolution, quantity of text, size, stroke weights, and color must be taken into consideration. Large text being used as a graphic element should use techniques discussed for images. Text on-screen is rendered at a much lower resolution (about 85 dpi) than text in a book or magazine (about 1200 dpi). This is important because the clarity we are accustomed to is not possible
on-screen. Therefore, creating large amounts of text to read without breaks can be very challenging for the reader. Breaking up the text into smaller units of information gives the user an opportunity to skim and highlight the important points. Using typefaces that contrast, like a bold with a regular weight, can also help to break up the information. Type sizes smaller than 12 points are also difficult to read on-screen, again due to low screen resolutions. The lighter weight typefaces should also be avoided. The thin strokes have a tendency to disappear. Controlling the color of type is difficult because there is such a variety of monitors. Each user can have a slightly different outcome. So, creating a type color that has good contrast between the background should be enough to aid in the legibility. Type on-screen is created using square pixels. This applies a stairstep quality to the type called aliased. To compensate, a technique called anti-aliasing is used. The foreground (type color) and the background are blended, making the type appear to have more resolution. Anti-aliasing is not recommended when working with smaller type, 12 points or less. If the background of anti-aliased type does not remain constant, an outline will appear around the type decreasing legibility. Anti-aliasing is also used with images.

**Typography basics exercises**

Find 5 typefaces in each classification; serif, sans serif, and decorative. Next, experiment with cre-
ating contrast between the typefaces. Which typefaces work well? Which don’t? Also, create a grid and experiment with the typefaces as headlines and body text, changing the sizes, and color.

**Interactive basics**

Interactivity means “putting the user in charge”\(^\text{12}\) The target audience drives the level of complexity necessary for the project. The interactivity can range from a very basic slide-show to a virtual reality environment.\(^\text{13}\) *(See Appendix D)* Keeping the project simpler allows for easier and faster production of the electronic portfolio. The interactivity for this project should be somewhere between a slide-show and allowing the user to move in a non-linear manner. The most commonly available computer used by your target audience will help pin point the level of interactivity. Most of the assessors are probably using older computers, so large files and functions requiring extra plug-ins are not a wise choice. The educator should focus on making the electronic portfolio as user-friendly as possible. As the educator’s knowledge base grows additional interactivity can be added.

**Usability**

Creating an environment that seems intuitive is usability. The designer anticipates how the user will behave while using the interactive piece. Today most users come to the table with familiar outcomes. Such as, a mouse click equals moving to a different page, or moving the mouse over a

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\(^{13}\) Kristof, 37.
word and the color changes, signals the user to click. The user relies on interactions that have worked in the past.

Kristof and Satran have proposed a few guidelines for creating successful usability:

1. Remove obstacles, try not to make the interactivity too elaborate. For example, showing a picture of the object and showing a menu to explain further.
2. Minimize effort, don’t force the user to move around the screen unnecessarily. For example, spreading related items throughout the page.
3. Give feedback, allow the piece to respond to user’s actions. For example, displaying a clock when a complicated action is requested.
4. Be explicit, if it looks like a button then it should act like a button. Don’t confuse the user.
5. Be flexible, give users options to skip things they have already seen, like introduction pages.
6. Be forgiving, don’t force the user to do everything perfectly in order to move forward. Add helpful hints or easy access to the answer(s).

**Functionality**

Functionality is how well the interactive controls work. Is there consistency when using each control. Interactive controls are things like: hypertext, highlight buttons, rollover buttons, hot spots, animated buttons, imagemaps, and menus.

**Choosing an authoring tool**

When choosing an authoring tool, there are two choices; an authoring language (Lingo, HyperTalk, HTML, C++, C, JAVA, Assembly Language) or an authoring program. (Authorware, Macromedia Director, mTropolis, HyperCard, Apple Media Tool, Microsoft PowerPoint). The advantages of using an authoring language are the ability of control and the piece can be scripted
to do anything. The disadvantages of using an authoring language are it is time-consuming and it
takes a considerable amount of time to learn. The advantage of using an authoring program is
that most are very user-friendly. Macromedia Director was used to create the case study in chapter
5. Capabilities such as, animation, sounds, and video should be taken into consideration when
choosing an authoring tool. The target audience for this workbook would be more familiar and
comfortable with a program like Microsoft PowerPoint. The choice of an authoring tool is second-
ary to the design, interactivity, usability, and functionality of the electronic portfolio. As educators
learn and explore other authoring options they can easily integrate any of the suggestions made
within this thesis.

**Visual elements**

Visual elements are tangibles that appear on the screen. Illustrations, photographs, logos, icons,
charts, diagrams, graphs, and maps are examples. There are two types of visual elements: object-
oriented and bitmapped. Object oriented or vector graphics are created using mathematical
equations. Object-oriented graphics are created in draw programs like Adobe Illustrator,
Macromedia Freehand, and Corel Draw. They tend to create smaller files. Bitmapped or raster
graphics are created with pixels. There are 72 pixels in every inch. They tend to have very large
file sizes. Images that are scanned or taken with a digital camera are considered bitmapped.
Adobe Photoshop is a bitmapped program. So what type of image do you need, bitmapped or
object-oriented? When selecting visual elements the purpose of the element needs to be taken
into consideration. Usually a combination of the two are used, to make the interactive
piece effective.

Photographs are good to use because they are realistic. They create very powerful images that
evoke responses. Photos can be taken with a traditional camera and then scanned or downloaded directly from a digital camera. Either technique creates a bitmapped image. These images tend to be very large in file size. One way to keep the file size at a minimum is to scan all images at 72 ppi (pixels per inch). Because the electronic portfolio will be viewed on a screen, it is wise to match the image resolution with the monitor resolution. The standard display resolution for most monitors is 72 ppi. The larger the scanning resolution the larger the file size and the longer it takes to display. The educator needs remember that their audience will be probably be using low end computers. If the web is the final output smaller file sizes are a must.

Illustrations have a style of their own. Illustrations can be drawings, icons, buttons, charts, graphs, logos, etc. Illustrations can be created to communicate complex ideas, to show detailed information, or to portray a distinct style. Because illustrations are created in mathematically based programs the files are very easy to manage. The graphics are very smooth and clear.

Illustrations can be created from scratch or purchased from the local computer store or online. Image club (imageclub.com), EyeWire (eyewire.com), and Digitalvision (digitalvisiononline.com) are all great sources to purchase illustrations, photographs, typography, video, and sound.

**Sound**

Sound adds depth and complexity to the users experience. Sound can make a great impact if used effectively. Sound in an electronic portfolio can be in the form of background music, voice over narrative, or as sound effects (a button that sounds like a turning page when clicked). If sound is used incorrectly it can hinder the interactivity. For example, using background music that is up beat and dramatic, when the message is suppose to be calming. Using poor quality recordings can also have a negative effect.
The sound to be used in the portfolio can come from resources like, live recordings, stock recordings, or hiring a professional. Most computers have built-in equipment that turns analog sound into a digital format. Stock recordings can be found at the local computer stores or on-line. If a professional is needed smaller studios can be very affordable. Most interactive software have the capability to add sound.

Animation

Animation is the illusion of motion. It can be used to express complicated ideas. Animation can add excitement and interest. Animation can be incorporated in the form of rotating graphics, shifting buttons, and transitions of color or images. It’s common to see animation within an interactive format.

Some animation effects would be using a button rollover, highlighted text, loops, transitions, and morphing. Consult your chosen authoring software for a detailed application of use. Animation can be a very enticing technique. When using animation make sure a strong concept supports the animation.

Video

Video, like animation and sound, is very powerful and can take your electronic portfolio to the next level. But beware, video is a very complicated medium. Video could be used to show the educator’s philosophy or interaction with the students. Most people do not have access or the know how to use video equipment. Sources for acquiring video would be, hiring a professional, stock media, or doing it yourself. Digital video cameras are becoming very popular and affordable. Software like Adobe Premiere and Adobe After Effects could be used to create your video. If the original video is in an analog format, hiring a professional is probably the best solution.
Interactivity is a very complex component. To harness the full potential of interactivity remember the following: one, the audience dictates the level of complexity. Two, the interactivity should produce a user-friendly environment. Three, choose an appropriate authoring tool. Four, visual elements like illustrations and photographs can really enhance communication. Lastly, sound, video, and animation can elevate the interactivity.

**Interactivity basics exercises**

Experiment with using different authoring tools. After experimenting, decide which tool best fits your skill level. Set aside a fair amount of time to complete all of the tutorials supplied with the software.

**Evaluation of an example**

An electronic portfolio and a professional web site will be evaluated using the design, typography, and interactive basics reviewed earlier in the chapter. Both interactive examples were created specifically for the internet. The technique to be used is called a critique. Critiques evaluate both the strongest and weakest areas of a composition. After a thorough critique revisions can be made. Critiques are also helpful in that they allow you to step back from your work and look at it objectively. Many times the designer is working so close to the project that they lose sight of the whole picture. Evaluating examples helps to further the understanding of the new knowledge gained. It’s one thing to read something and understand, but when there is a visual example the connection is made a lot easier. Continuously referring to visual examples can aid the design process.

**Jim Nelsen’s web site**

The first electronic portfolio to be critiqued is Jim Nelsen’s. Refer to Appendix E for examples of
still photographs or access Jim’s actual web site, http://www.uwm.edu/~jnelsen/. The pages to be evaluated are, the home page, introduction, table of contents, and resume.

*Home page*

Jim is a middle school social studies teacher. His home page has six buttons that direct to his electronic resume, virtual teaching portfolio, useful links, U.S. history on the web, and A.P. european history. For this critique, only the virtual teaching portfolio will be used. A definite visual hierarchy has been established, first the welcome information is read and then the six buttons. The welcome is read first because it is bold and it’s at the top of the page. A horizontal line is used to divide the bottom portion of Jim’s page this is the third element in his hierarchy. The information below the line pertains to sending him an email.

*Strengths*

- An established visual hierarchy.
- Consistent use of sizes of buttons and the use of a graphic to suggest the topic.
- Putting contact information in the beginning.
- Blue link buttons are easy to locate.

*Weaknesses*

- An established grid is not used.
- The yellow type used for the introduction paragraph can not be read with the brown wood textured background. The use of a serif type also makes it quite difficult to read.
- The type is also very small, and has a very wide line length.
- There doesn’t seem to be an established theme. How does the wood grain texture relate to his content or to the graphics used?
• The type of graphic needs to be consistent. (*See Appendix E*)

Possible solutions

• Use a solid background, or use a value closer to 20% for the pattern. This will help with the legibility and establish depth.

• Use larger type for the introduction. Make the type a color that contrasts well with the background chosen. Like black on white or a color on white. Bright yellow type over any color usually is very hard to read.

• Use better graphics to represent the subject areas, they look very amateurish. Use better clip art or create your own, try using a photograph instead. When using clip art try not to distort the graphics by stretching them, this makes it look like a mistake was made.

• Establish a theme, perhaps something related to Jim’s field of teaching. (*See Appendix E*)

Introduction, table of contents, and resume

The introduction, table of contents and resume will be critiqued together due to their similarity.

Strengths

• Consistency of a pattern background. It’s also used at a percentage that is easy to read the type on top of it.

• Blue navigation buttons allow for non linear movement.

• All text is black except for those that have links. This makes for easier reading of the text without the background interfering.

• All elements adjust to the size of the window. (*See Appendix E*)

Weaknesses

• Very type intensive, more contrast is needed between type styles.
Patterns used look like they are meant to relate. How do they relate?

The links have pages that are much more exciting than the authors page, so it’s easy to get absorbed in the link and to lose sight of the original reason for viewing that particular site. For instance, the Gustav Fritsche middle school site is high contrast and the type is easy to read. The high contrast gives the eye a welcomed relief from all the background patterns used in Jim’s site. (See Appendix E)

Possible solutions

• Use more contrast in type styles, and possibly use a san serif to indicate the subjects and a serif to explain or to show the link.

• Make adjustments to the layout (grid, color, better patterns, more contrast) to keep the viewer interested in Jim’s site. (See Appendix E)

Laughing Dog Creative, Inc web site

The second example to be critiqued is Laughing Dog Creative, Inc. Refer to Appendix F for examples of still photographs or access the web site at the following address, http://www.laughingk9.com.

Laughing Dog Creative is a graphic communications firm in Chicago, Illinois. They develop marketing and sales programs for technology-based and consumer-based enterprises. Their philosophy is very relaxed and centered around a dog theme.

Grid

The theme of this site centers around a laughing dog. The owner wanted to entertain prospective clients. This would show the firm’s personality. Because Laughing Dog clients are high-tech, the site uses techniques that are a little complicated. To view the site you must have the latest version
of Flash. If Flash isn’t available, you are directed to download a free copy. Each of the
sections of the site use the dog theme. For example, the portfolio section is called the
dog house, the employees section is called the pack, the question and answer section is called
k9faq’s and the president’s statement is the top dog. Throughout the site a dog barks when you
go to a new section.

Initially the site uses an introduction page that gives you the option of skipping to the table of
contents. This page changes periodically. The table of contents uses a photograph of a dog. The
dog whistles until you choose a subject. The eyes of the dog follow the cursor.

This site uses a very simplistic grid. Each of the eight sections uses a banner at the top of the
page, which shows the section you are in and a submenu. The banner also has a low contrast pat-
tern of the laughing dog logo. A button to go directly to the table of contents and a help button
are displayed on every page. The banners change color as they go through each of the sections.
The area for type and images uses a white background. This gives the site excellent contrast and
helps direct the eye to the appropriate level on the hierarchy.

Navigation throughout the site is very easy. Each page has the ability to move forward or backward
within the subcategory. One distraction I found was that the forward and backward buttons
moved vertically according to the amount of text. Consistent placement of the buttons would have
made this task a little more user-friendly.
Overall, I thought the site was very interesting and easy to use. It was successful in targeting the Laughing Dog audience. It used color, the grid, and typography very well. A lot can be learned from viewing a variety of examples. The educator should spend some time researching other interactive projects.
Part 4
Production

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Test design exercises
The design process is similar to the writing process. First a theme or purpose is created. Then an outline. Next a first draft, followed by the first revision. The revisions continue until a final is settled upon. In the design process of an interactive piece, a concept is generated, then a flowchart (outline), next a storyboard (first draft), then a layout (second draft) and then a prototype (final paper).

**Concept**

The first step in the production stage is to create a concept. A concept is an idea, an overall theme. For example, in part 5 case study, the concept of using different disciplines of science, was used to illustrate each of the NBTS standards. The examples used only focused on a particular science. The audience viewing Amanda Van Dyke’s portfolio would be very familiar with those images.

The use of a metaphor is also very common. A metaphor is an implied comparison between two unlike things. For example, computers having a desktop to store folders and files. The use of a metaphor can aid in the comprehension of the content.

**Interface design**

**Flow chart**

A flowchart is a basic outline of your content. The flowchart shows the different categories and levels needed to successfully access the content. It diagrams the organization of your project. A flowchart helps the author better understand the relationships of the hierarchy and should be referred to throughout the project. The goal of a flowchart is to develop an understandable interface.
A good flowchart often reveals flaws in the organization of content and proposed use of interactivity. The sooner potential problems or concerns are spotted, the earlier—and less expensive—problems are to correct. The further along in the design process the problem is discovered, the more time, money, and effort it will take to correct the problem.” 13

Linear, hierarchal, and hybrid are three types of flowcharts. A linear flowchart is the simplest of the three. It represents the navigation in one direction only, forward or backward. It is similar to a slide show. The hierarchal flowchart shows the different avenues to access the information, main menus to headings to subheadings. There is more than one direction of navigation. A hybrid flowchart is a combination of the previously mentioned flowcharts. It’s predominantly hierarchal in structure, but introduces the linear when meaning is sacrificed. For instance when telling a story.

**Storyboard**

A storyboard is a refinement of the flowchart. A storyboard further defines the relationships of content, images, sound, and interactivity. This is accomplished by using pictures and words to illustrate the appearance of every screen. The storyboard is important because it is the link between all parties involved (client, programmers, graphic designers, writers, etc.) in creation of an interactive piece. At this stage drawing skills are not important. The goal is to get a basic understanding of content, navigation, and usability.

Layout

After the storyboards have been completed a layout must be generated to support the plan. At this stage a composition is created for each screen using the design and interactive basics discussed in part 3. The visual appearance begins to take shape. A style needs to be created to support the theme or metaphor decided upon earlier in the process. The style chosen should reinforce the content and the message. The style not only applies to the images, but also to the typography, sound, and motion. Style creates a personality for the layout.

When determining a layout consistency is a key element. Consistently utilizing a grid, typography, color, graphics, and sound will help to unify the interactive piece. The layout must function as a group and as individual pieces.

Interface basics exercises

Create a concept, flowchart, storyboard, and layout for your electronic portfolio.

Prototype

A prototype is a representation of your interactive piece. It combines the flowchart, storyboard, interface, and the layout into an on screen version. The final software application should be used to produce the prototype. Creating a prototype helps to assure the success of the project. The initial prototype is a simple shell of the final product, merely storing elements as they are completed. Eventually each screen will be represented with graphics, navigation controls, and content.

The prototype will help to flush out problems like: organization of the content, functionality, navigation, integration of the interface, and consistency of the elements from screen to screen. The prototype should include interactive controls, text, graphics, video, sound, and animation.
The complexity of the prototype is based on how it will be used. Is it to sell the idea, to test the design, or to build the final product? The prototype for this thesis will be used to test the design. It will allow the author to become familiar with the chosen authoring tools capabilities, and actually test the design with the targeted audience.

**Prototype exercises**

Create a prototype for your electronic portfolio.

**Test design**

Testing has three stages: the alpha, the beta, and the final version. The alpha version is an almost completed copy. In this stage major problems are detected, documented and solved. The beta version is the last opportunity to fine tune. At this point the focus is on getting the piece ready for distribution. The final version is the last step in completion. It is a finished copy ready for distribution.

**Test design exercises**

Test your electronic portfolio.
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Case Study

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Completing the content (nsta standards)

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This case study demonstrates the entire production process. It is a combination of the efforts of an educator, Amanda VanDyke, and a graphic designer, Cynthia Cully. The initial thinking was to introduce Amanda to the design process. By familiarizing her with design, typography, and interactivity basics necessary for a project like this. Due to a time constraint we realized that a combination of each of our strengths would produce a very positive result. Outlined below are the results.

**Target audience**

The audience for this thesis is the K-12 inservice educator. The electronic portfolio would serve to aid educators in the process of going for promotion, national certification, self-assessment, or new employment. A sample of the target audience were given a questionnaire. The following is the resulting data. The educators surveyed had experience ranging from 1.5 years to 12 years. Their knowledge of computer technology included using word, powerpoint, excel, the internet, and email. Their experience with electronic portfolios was non existent.

Conventional portfolios had been or are currently being used by about half of the inservice educators. The conventional portfolios used are student portfolios and not professional portfolios. Using the internet for research was a dominant interactive media used in their classrooms. The majority of educators surveyed felt that the electronic portfolio would be of benefit rather than using the traditional portfolio. The benefits stated were as follows: convenience of multiple viewers assessing simultaneously, would demonstrate skills in technology, and less paper. Some disadvantages noted were: already completing a traditional portfolio, frustration of using computers, time to complete, appropriate training, updating, accessibility of anyone, frustration with the process, instruction on the software, content, and skill level of the person assessing. The inservice
educators were also asked about their thoughts on the importance of design, interactivity, and the user in the process. The importance of design averaged about a 6 on a scale of 1 to 10, 10 being the most important. It received as low as a 1 and as high as a 10. Interactivity averaged 7.5, receiving 5 as a low and 8 as a high. The user averaged 7, receiving 5 as a low and 10 as a high. What this shows is that the importance of design, interactivity, and the user in the process isn’t taken as seriously as it should be. The creator is worried more about his/her frustrations than the frustrations of the end user. Which hopefully after completing this self paced workbook will not be an issue.

**Amanda Van Dyke’s electronic portfolio**

The entire process took about a year. Amanda is a high school science educator and has 14 years of teaching experience. Her main objective was to complete an electronic portfolio as a requirement for her masters degree. Her secondary objective was to use this electronic portfolio to seek national certification. Her experience with computers was on the PC platform. She utilized software such as: Excel, Word, and Powerpoint and occasionally found a need to scan images.

The original plan was to assist Amanda in creating an electronic portfolio. *(See Appendix G)* This would be done by equipping her with an understanding of basic design and interactive fundamentals. As we became more involved we realized that Amanda needed and wanted a much more comprehensive understanding of the entire process, not just a tips and tricks session to assist her with design. Thus, this thesis was created to assist the preservice educators who find themselves in this situation.

**Completing the content (nsta standards)**

Before the electronic portfolio process can begin the educator must complete the contents por-
tion. Using a set of standards based on those of the Interstate New Teacher Assessment and Support Consortium (INTASC) or the National Board for Professional Teaching Standards (NBPTS) is recommended. Amanda chose to use the National Science Teachers Association (NSTA) standards. *(See Appendix A)* The local school district should be able to suggest the appropriate standards applicable. Having a set of standards makes the content writing process easier.

Blocking out a sizable amount of time to complete the writing portion is also suggested. Amanda allotted about 6 months to thoroughly address the 10 NSTA standards. Updating and recording the educator’s progress throughout his/her career can really streamline the writing process.

Collecting examples of each standard while doing the writing can prove to be very helpful also.

**Concept**

The overall theme for Amanda’s portfolio is the disciplines within the biological sciences. Specifically the following branches of biology; genetics, botany, microbiology, cytology, ecology, taxonomy, zoology, and evolution. Initially we thought using the 5 Kingdoms (monerans, protists, fungi, plants, and animals) would be an appropriate way to guide the user through the portfolio.

By using the technique of brainstorming we found that the disciplines of general science would be much more appropriate and would give us much more flexibility. Each standard would use a theme of one of the disciplines. For example, the teaching standard uses botany. Each standard would also show examples based on the discipline.

During the brainstorming process a list was made of terms, equipment, equations, and activities used within the general sciences. Ideas such as using the metaphor of a periodic table as a navigation device were discussed. During brainstorming all ideas are viable. Weak ideas are not deleted until later.
Flowchart

After deciding on a theme a flowchart was created. There were three main objectives to creating the flow chart.

1 Establish a hierarchal flow chart.

2 Establish a navigation system

3. Establish a better understanding of the amount of pages required to complete the project.

The flowchart outlined the 10 NBTS standards and the subcategories with reflections. Amanda had to show her competencies by writing a reflection for each subcategory. The reflections were supported by written and visual examples. The flowchart helped to establish a hierarchy. During this process we realized that an introduction page was necessary. It would contain Amanda’s philosophy and options for immediately viewing the electronic portfolio or viewing Amanda’s resume. This option gave a previous user the ability to pick up were they had left off.

Navigation became a key concern. How would the forward and back buttons relate within the hierarchy? At what point is the quit button introduced? If a reflection is long, should scroll bars or continue buttons be used? Would all of the reflections have visual examples? If not, how would those pages relate?

Storyboard

Next, the flowchart was refined by suggesting type, images and navigation buttons. Since the audience for this portfolio would probably be using a lowerend computer, simple sketches were created using a proportionate size to 640x480 pixels. If the web is going to be the medium of choice,
taking a screen shot (command+shift+3 macintosh or F13 pc) of the browser will give you a tem-
plate to create your storyboards.

Layout
Adobe Photoshop was used to layout the initial foundation. Why not use Macromedia Director at
this stage? Sometimes it's easier to create the preliminary layout with software that you're very
familiar with, to speed up the process. At this point you're trying to get a feel for the grid, typog-
raphy, color, and graphics.

Every page is not done, only the main pages. In this case, the introduction, table of contents and
reflection pages. A 10 pixel grid was used. The typefaces used are syntax, didot, and janson. Didot
and Janson were only used to differentiate the introduction and table of contents pages. Syntax
was used throughout the rest of the pages, because it is a sans serif with many contrasting styles
and it is very easy to read on the screen. Each standards page used a two color scheme. The corre-
sponding reflections page also used that same color. The color of the type was always black, unless
there was a linking reflection. If so, the type used one of the colors on the standards page. A few
of the photographs were scanned and placed into position. At this point, special effects are intro-
duced. As the layout begins to take shape, decisions are made to standardize so a a template can
be made that is easy to use and understand.

Prototype
Before beginning this stage, all of the photographs, the copy, and sound were created.
Macromedia Director was chosen to finalize the prototype. Director was chosen because it is a
very versatile program. It can support music, animation, interactivity, and databases. It is also the
program of choice in the design community. Beware, Director is a very complex program. I chose
it because I was familiar with its capabilities. I would suggest using PowerPoint or creating a web site for those educators new to this process. I would also suggest utilizing all of the tutorials so that you can become familiar with the software.

Test design

The electronic portfolio was tested using other educators. This step is very valuable because of the feedback. At different times in the prototype stage the portfolio was tested, each time specific issues were addressed. The final version was delivered to Amanda’s professor, she passed with flying colors. He was amazed and pleased with the amount of content, and the professionalism of the portfolio.

Outcomes

Before Amanda created her electronic portfolio, she felt that the content should be enough to produce a successful portfolio. After experiencing the electronic portfolio process, Amanda has reflected that she understands how design plays a larger role in the success or failure of the portfolio. She understands how consistency, color, and functionality contribute.

Amanda continues to use the design skills she acquired. She has begun to take note of all the design that surrounds her. When creating biology course work she makes an effort to ensure that hierarchy, contrast, legibility, and consistency exist. Typography has also become an integral part of her handouts, notes, and exams. She understands how important legibility, alignment, and contrast are when choosing fonts.

Amanda had the opportunity to create both the traditional and electronic portfolio. She believes the electronic portfolio has many advantages. For instance, she feels the electronic portfolio has
greater impact on potential employers and national certification committees. The interactive facet entices users to explore. It gives a better representation of the educator and his/her growth. Amanda also cited the potential to add audio and video directly to the portfolio, streamlining the materials necessary for certification. Improvement of presentation skills were also an advantage. Amanda learned new techniques that she has been applying.

Amanda has the following advice for other inservice educators: first, complete the written content. This will enable the educator to organize the information more easily. Second, participate in a 4 to 6 week workshop to help in the completion process. Each week a different section of the portfolio would be addressed and completed for the following workshop.

Overall, Amanda recalls having a positive experience with creating an electronic educator’s portfolio. She recommends that inservice educator’s take advantage of this new assessment process.

**Conclusion**

This case study illustrates how design can impact other disciplines. It also clearly demonstrates how acquiring a basic understanding of design, typography, and interactive basics empowers the educator and clarifies communication. The electronic portfolio process outlined above can be applied to other projects. The opportunity to share the design process with another discipline has also been a wonderful experience for me.
Part 6

Conclusion
Conclusion

This thesis has intended to assist the K-12 inservice educator in creating an electronic portfolio. By outlining the process and components necessary to effectively communicate the educator’s ideas, knowledge and growth. A basic understanding of the design, typography, interactivity, and production techniques were discussed to show the educator the steps involved.

This thesis has also documented the importance of the design component. So often, design is ignored outside of the graphics community. Content becomes the catalyst and design is an after thought. This makes the project more of a product instead of an experience for the user. Design is the element that ties everything together. It organizes, unifies, and relays the appropriate message to a specific audience.

Design helps the user to better understand the message(s) of the educator’s electronic portfolio. Is the portfolio being used for promotion, certification, self-assessment, or new employment? By using the design basics, visual hierarchy, balance, unity, contrast, and color the educator can improve the quality, usability, and functionality of the portfolio.

Typography also helps to communicate a specific message. Using typography to navigate, or as headings to assist the user with skimming produces a very readable and legible portfolio. Educator’s portfolios generally have very large amounts of text, so typography can help to effectively communicate the educator’s growth and knowledge.

The main objective of interactivity is to create a user-friendly environment. By focusing on usability, functionality, visual elements, sound, animation, and video the educator can achieve this goal. Interactivity can always be added as the educator’s knowledge, and comfort level grows.
It is suggested that the educator allow enough time to thoroughly explore and use the techniques outlined. Utilizing the information learned in all facets of their job, not just in the construction of the portfolio. This will enable the educator to become more comfortable with design.

Creating any type of interactive project can be a very complex task. Hopefully the process outlined in this thesis can assist not only the educator, but anyone wishing to produce a multimedia project.
THE INTASC MODEL STANDARDS FOR TEACHER LICENSING

As part of the many initiatives that have been undertaken to strengthen the teaching profession, a National Board for Professional Teaching Standards was established in 1987 to develop standards for the advanced certification of accomplished teachers, much as professional certifying agencies do in assessing physicians, architects, accountants, and others. The National Board has since developed standards and assessments that evaluate accomplished teaching. These standards articulate in performance-based terms what highly accomplished teachers know and are able to do to provide high quality education for their students. This focus on performance has the great advantage of illuminating what expert teachers do and how they use knowledge to support student learning, thus clarifying the nature of highly accomplished practice and the purposes of teacher learning and development. A major question has been how these standards can be translated into standards for licensing beginning teachers, so that they have a broader effect on the profession and on the teaching of all children.

Over the last two years, INTASC has articulated performance-based standards for initial licensing of teachers that are built upon and compatible with those of the National Board. They articulate what entering teachers should know, be like, and be able to do in order to practice responsibly, and to begin the journey toward deepening expertise that will enable highly accomplished practice as the teacher’s career evolves. The introduction to these model standards states:

The National Board and INTASC are united in their view that the complex art of teaching requires performance-based standards and assessment strategies that are capable of capturing teachers’ reasoned judgments and that evaluate what they can actually do in authentic teaching situations (INTASC, 1992, p. 1).

Also incorporated in the model standards was the work in a number of states, including
California, Minnesota, New York, and Texas, and the efforts of teacher educators, including the Holmes Group of education deans and Alverno College’s performance-based approach to teacher education.

Members of INTASC decided that the proper benchmark for determining teacher licensing standards should be based on considerations of what students need in order to learn effectively, rather than on what the current system of preparation provides. Thus, the standards represent the kinds of understandings and abilities teachers should have in order to teach diverse students responsibly from their first day of employment as a licensed teacher. Systems of preparation and assessment for licensing should then be designed to ensure that all candidates have mastered these understandings and capabilities through whatever courses of study and structured practical experiences are necessary.

The resulting standards are expressed in the form of ten principles articulating the common core of teaching knowledge:

Principle #1: The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

Principle #2: The teacher understands how children learn and develop and can provide learning opportunities that support their intellectual, social, and personal development.

Principle #3: The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

Principle #4: The teacher understands and uses a variety of instructional strategies to encourage students’ development of critical thinking, problem solving, and performance skills.

Principle #5: The teacher uses an understanding of individual and group motivation and behavior
to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

**Principle #6**: The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

**Principle #7**: The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

**Principle #8**: The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of the learner.

**Principle #9**: The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

**Principle #10**: The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students’ learning and well-being.

Each principle is further discussed in terms of the knowledge, dispositions, and performances it implies. These provide the basis for evaluating evidence about a candidates’ achievement of the standard, thus providing guidance for both preparation and assessment.
Visual Hierarchy

Balance
Repetition

Grid
Alignment

everything in the composition should be aligned.

Contrast

visual hierarchy
balance
unity
repetition
grid
alignment
contrast
color
primary
secondary
tertiary

value

size
shape
color
12 Step Color Wheel

Primary Colors
Secondary Colors

Tertiary Colors
tracking equal spacing between three or more characters.

**Lowercase vs. Uppercase**
Lowercase characters are easier to read than uppercase characters. We read the shapes created by the characters. Uppercase characters create rectangles, which slows the reading process.

**Top half of characters**
The top half of characters are more legible.

**Right half of characters**
The right half of characters are more legible.
Times
Baskerville
Bodoni
New Century Schoolbook

Helvetica
Futura
Gill Sans
Eurostile
STENCIL

Nuptial

Trixie

Decorative

Aliased type

Anti-aliased type
How much interaction?

<table>
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<th>Slide Show</th>
<th>Full-immersion virtual reality</th>
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<tr>
<td>pace</td>
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</tr>
<tr>
<td>slide</td>
<td>choose where you want to go at any time</td>
</tr>
<tr>
<td>sequence</td>
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<td>control</td>
<td></td>
</tr>
<tr>
<td>simulation</td>
<td></td>
</tr>
</tbody>
</table>

- click when you are ready to advance to the next thing
- choose where you want to go at any time
- start/stop video: search text: scroll/zoom the view
- change the outcome of a chart: customize a database search
- enter a password: pay a bill: send a message
- move things around screen: shoot ducks: behead opponents
- change the perspective of view, or the course of events/action

---

Appendix E
Jim Nelsen’s Web Site

Introduction

Table of Contents

Jim Nelsen's Home Page
Appendix E — Jim Nelsen’s Web Site

Resume

Department of Sociology Link
Appendix E

Jim Nelsen’s Web Site

Gustav Fritsche
Middle School Link
Table of Contents

Capabilities, The Doghouse
Capabilities, Programs

Capabilities, Logos
Accolades

Recent Awards
- 2000 HOW Magazine: Outstanding Achievement, Laughing Dog Corporate Identity
- 1999 Print Design Award, Laughing Dog Corporate Identity
- 1999 Print Magazine: World of the Year
- 1998 Print Magazine: World of the Year
- 1996 Print Magazine: World
- 1995 Print Magazine: HOW Magazine

Top Dog

Biography
Frank GIudich, President
The Dog has been working in the advertising and design field for nearly 15 years. Before graduating from Carnegie Mellon University, Frank has worked in a wide range of disciplines, including environmental design, graphic design, graphic design, graphic design, graphic design. He is the proud owner of a H5K with numerous awards (some of which he has actually won). Frank has a Bachelor of Science in Graphic Design and has been working in the field for nearly 15 years. His passion for design allows him to create unique and powerful designs that capture the attention of his clients. Frank has also been involved in various charitable organizations, including the National Park Foundation, and he enjoys giving back to his community through his work.
Gift Shop

JUMP INTO SOMETHING NEW!

What better way to face the summer heat than with a Laughing Dog t-shirt or sweatshirt? 100% cotton, 100% cool. Designed by our resident artist, "No Funny Business" will make even the most dour and dourminded smile. The cool graphics and cute designs, our loyal logo, and artistry and inspiration. "The Humpty's Dove" are back. The shirts come in three colors: Gray, Black, and Grey Blue, as they do. Only One color! Normally Quantities are limited. $15.00 each, includes shipping and handling.

JOIN THE SATISFY CROWD

Be a designer! Pick your shirt. These laughing dog designs are 100% best, a picked 100% polyester men's shirt. Super-comfortable, this Laughing Dog sweatshirt the black covers our.

Inquiries

INQUIRIES

MORE INFO

Be a request for a presentation, project quote, or additional information, contact The Doghouse Inc.

Telephone: 773-323-4409
Fax: 773-323-4487
E-mail: THEDOGHOUSEINC

Business Hours: 9:30AM - 5:30PM (CST), M-F.
We accept major credit cards.
Introduction

Welcome to my electronic portfolio presentation designed to adhere to the professional level of the National Science Teachers Association (NSTA) standards for science teacher education. My portfolio includes an example and reflection for each of the indicators listed under the NSTA professional standards. The intent is to enable you to examine how each of the indicators of the standards are addressed in my classroom. You may begin the interactive exploration of this electronic portfolio by clicking on the electronic portfolio or the return button on the page.

Resume Page 1

Amanda VanDyke

12345 New Road
Cincinnati, OH 45234
Phone: 123-456-7890

Educational Development
Amherst University, Oxford, Ohio.
Graduate program: National Science Foundation/Project: Workshop, 1999.

Profession/Life Experience
Assistant Softball Coach, 1997-present.

Teaching Experience

* Biology Teacher grades 9-12
* Math and Science Coordinator, 1994-96
* Track Coach, 1995-97.

Current

- Assistant Volleyball Coach, 1997-present.
- Assistant Soccer Coach, 1998-present.

Professional Development

- Consultant, 1995-present.
- Presenter, 1996-present.
Content

1b Reflection
2a Reflection

The nature of science

Reflection: The development of knowledge and ways of thinking about knowledge is demonstrated during the science activity. The cube activity involves a cube containing patterned information. In each role, students study the cube of information, as indicated to them, at their own pace. Gradually, students begin to grasp at the connectedness and relationships of the cube. Eventually, students will develop hypotheses about what is on the side of the cube, testing the data. A discussion follows in which they reflect on the process; then they graph and collect data, hypothesize, develop a hypothesis, record the hypothesis, and record additional information as observed. Further discussion includes an opportunity for students to defend their hypothesis and relate the activity to experience of scientists as they develop hypotheses about the world around us.
Teaching Inquiry

Context of Science
Social Context
Assessment

8b Reflection
Environment for Learning

Professional Practice
10d Reflection

Reflections: I served as a cooperating teacher for a student teacher from Antioch University during the spring and fall of 1998. The program involved an internship during the spring, with 20 days ofaled teaching and 20 days of involvement in daily activities during the fall. Frequent written and oral evaluations were provided to the student teacher. Two final evaluations and a letter of recommendation were provided to Antioch and my student teacher.

April 15, 1998
Ms. Maggie Vandyke
Professor, Antioch University
P.O. Box 406
Dayton, Ohio 45406

Dear Ms. Vandyke,

Thank you for the opportunity to serve as a cooperating teacher in the spring of 1998. I enjoyed working with the student teacher and was impressed by her dedication and willingness to learn. I believe that she has the potential to become an excellent teacher and will be a valuable asset to any classroom.

Sincerely,

[Signature]

10f Reflection

Reflections: I attended several SEEO conventions. I attended the SEEO convention in February 1999 at Dayton Convention Center. The electronic portfolio that you are experiencing was prepared with the intention of being included in a presentation by Dr. Tedes at state and national conferences. The design of this portfolio is intended to provide an example to science educators as they undergo requirements for continued certification in the future.

The SCIENCE EDUCATION COUNCIL OF OHIO
presents the 22nd Annual
SCIENCE EDUCATION CONFERENCE
FEBRUARY 11-13, 1999
Dayton Convention Center
Dayton, OHIO
## Introduction

Welcome to my electronic portfolio presentation designed to conform with the professional standards set forth by the National Science Teachers Association (NSTA) standards for science teacher education. My portfolio includes an example and reflection for each of the indicators listed under the professional standards. The main goal is to enable you to examine how each of the indicators of the standards are addressed in my instruction. You may begin the interactive experience of this electronic portfolio by clicking on the electronic portfolio or the contents factor on the page.

### Example of Grid Used

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Resume</th>
<th>Electronic Portfolio</th>
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</thead>
<tbody>
<tr>
<td>Amanda VanDyke</td>
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<td></td>
</tr>
</tbody>
</table>
Part 7

Bibliography
**Books:** educational portfolio


**Books:** design


**Books:** *interactivity*


**Periodicals:** *educational portfolio*

Goldsby, Dianne S. “Technologies Answer to Portfolios for Teachers.” *Kappa Delta Pi Record* 36 no3 (Spring 2000): 121-123.
