Educational Media and Technology Yearbook 37

Michael Orey
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Educational Media and Technology Yearbook

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Educational Media and Technology Yearbook

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Preface

The audience for the *Yearbook* consists of media and technology professionals in schools, higher education, and business contexts. Topics of interest to professionals practicing in these areas are broad, as the Table of Contents demonstrates. The theme unifying each of the following chapters is the use of technology to enable or enhance education. Forms of technology represented in this volume vary from traditional tools such as the book to the latest advancements in digital technology, while areas of education encompass widely ranging situations involving learning and teaching which are idea technologies.

As in prior volumes, the assumptions underlying the chapters presented here are as follows:

1. Technology represents tools that act as extensions of the educator.
2. Media serve as delivery systems for educational communications.
3. Technology is *not* restricted to machines and hardware, but includes techniques and procedures derived from scientific research about ways to promote change in human performance.
4. The fundamental tenet is that educational media and technology should be used to:

   (a) Achieve authentic learning objectives
   (b) Situate learning tasks
   (c) Negotiate the complexities of guided learning
   (d) Facilitate the construction of knowledge
   (e) Aid in the assessment/documenting of learning
   (f) Support skill acquisition
   (g) Manage diversity

The *Educational Media and Technology Yearbook* has become a standard reference in many libraries and professional collections. Examined in relation to its companion volumes of the past, it provides a valuable historical record of current ideas and developments in the field. Part 1, "Trends and Issues in Learning, Design and Technology," presents an array of chapters that develop some of the current themes

listed above, in addition to others. Part 2, "Trends and Issues in Library and Information Science," concentrates upon chapters of special relevance to K-12 education, library science education, school learning resources, and various types of library and media centers—school, public, and academic among others. In Part 3, "Leadership Profiles," authors provide biographical sketches of the careers of instructional technology leaders. Part 4, "Organizations and Associations in North America," and Part 5, "Graduate Programs in North America," are, respectively, directories of instructional technology-related organizations and institutions of higher learning offering degrees in related fields. Finally, Part 6, the "Mediagraphy," presents an annotated listing of selected current publications related to the field.

The editors of the *Yearbook* invite media and technology professionals to submit manuscripts for consideration for publication. Contact Michael Orey (mikeorey@uga.edu) for submission guidelines.

For a number of years we have worked together as editors and the ninth with Dr. Michael Orey as the senior editor. Within each volume of the Educational Media and Technology Yearbook (EMTY) we try to list all the graduate programs, journals, and organizations that are related to both Learning, Design, and Technology (LDT) and Library and Information Science (LIS). We also include a section on trends in LDT, trends in LIS, and we have a section profiling some of the leaders in the field. Beginning with the 2007 volume, we have attempted to generate a list of leading programs in the combined areas of LDT and LIS. One year, we were able to compose an alphabetical list of 30 of the programs that people told us were among the best. However, each year we have worked on being more systematic. Instead of following the *US News and World Report* model and have one top program list, we decided to use some of the same numbers that they use and generate a collection of top 20 lists, rather than attempt to generate a statistical model to generate the rankings list. One thought was to rank programs according to the number of publications that were produced; however, deciding which journals to include was an issue. We have decided to use a 5-year span, in this case 2007 through 2010, as the years to count (since at the time of writing, it is still 2011 and so we do not have a complete year). Furthermore, we decided to only count actual research reports that appeared in one of two journals, *Educational Technology Research and Development* and the *Journal of the Learning Sciences*. These two journals were primarily selected based on the general sense that they are the leading journals in the area of LDT. Noticeably absent is the area of information and library science. So, while these numbers are pretty absolute, choosing to only count these journals is somewhat arbitrary.

The other top 20 lists are based on self-report data collected as part of the program information in the Educational Media and Technology Yearbook. Every year, we collect general information about programs in LDT and LIS and publish this information in the Yearbook. Each year we also collect some additional data. We asked the representatives of each of the institutions to enter the US dollar amount of grants and contracts, the number of PhD graduates, the number of Masters graduates, and the number of other graduates from their programs. We also asked them for the number of full-time and part-time faculty. We then generated a top 20 list for some of these categories. The limitation in this case is that it is self-report data and

there is no real way of verifying that the data is accurate. So, while the list of the 30 top programs from the first year lacked hard data, and the lists this year are based on numbers, those numbers may be just as unreliable. In the end, we have a collection of lists that we hope will be of use to our readers. Many of the universities that appeared in the list last year are here again, in addition to many others. More information about many of these universities can be found in part 5 of this edition.

There are five top 20 lists in this preface. The first of these top 20 lists is based on a count of publications. We used every issue from the 2007 through 2010 volume years of the *Educational Technology Research and Development* journal and the *Journal of the Learning Sciences*. We eliminated all book reviews and letters-to-the-editor and such. We only used the primary academic articles of these journals. Each publication counted 1 point. If the article had two authors, then each author's institution received 0.5 points. If there were three authors, then 0.33 was spread across the institutions. Also, as an additional example, if there were three authors and two of them were from the same institution, then that institution received 0.66 points and the institution of the remaining author received 0.33. Finally, the unit receiving the points was the University. So, in some cases, you might have publications from two completely different departments in the same journal. Table 1 shows our results. The University of Georgia came out as the top LDT program in the world. They were number 1 last year too; in fact, the top 5 are exactly the same as last year. A big change from last year is Brigham Young University who jumped from 16th to 7th. Another big move was the University of Maryland who was not on the top 20 list last year, but who is number 9 this year. Also, please note that because there was a three way tie at 19, the next university to be on the list would be at 22nd place. Therefore, there is no 20th place on the list.

We would love to hear your feedback on this approach for the future. Are there other journals that ought to be included?; Is it unfair that there are more publications in ETRD than IJLS?; What about recent graduates publishing with their new institution when the work was done at their previous institution? I am certain there are many other issues, and we welcome constructive feedback.Table 1 Top 20 Graduate Programs in the area of Learning, Design, and Technology as measured by the number of publications in *Educational Technology Research and Development* and the *Journal of the Learning Sciences*

Rank	Institution	Points
1	University of Georgia	10.48
2	Indiana University	7.66
3	Arizona State University	7.32
4	Nanyang Technological University	4.83
5	University of Wisconsin	4.52
6	Stanford University	4.51
7	Brigham Young University	4.13
8	University of Toronto	3.9
9	University of Maryland	3.86
10	SRI International	3.69

(continued)

Rank	Institution	Points
11	University of Northern Colorado	3.25
12	Open University of the Netherlands	3.1
13	University of Colorado	3.03
14	Aristotle University of Thessaloniki	3
14	University of Missouri	3
16	Purdue University	2.96
17	Utrecht University	2.94
18	San Diego State University	2.85
19	Florida State University	2.5
19	University of Illinois	2.5
19	University of New Mexico	2.5

The two primary measures of research achievement are publications and grants. While choosing ETRD and IJLS was somewhat arbitrary, the numbers are verifiable. In Table 2, we present the top 20 programs according to the dollar amount of grants and contracts for that program over the academic year of 2010–2011. While Table 1 was constrained to LDT, Table 2 has both LDT programs and LIS programs which resulted in the University of Calgary being number 1 in the grants and contracts list, but not appearing at all in the publication list. In fact, the only institutions that are both on the list for publications and grants are the University of Georgia (1 for publications and 19 for grants), Indiana University (2 for publications and 12 for grants), and University of Missouri (14 for publications and 7 for grants)..

The only shake up in the top 5 is that the University of North Carolina failed to report their data this year. They were replaced in the top 5 by the University of Louisville.Table 2 Top 20 LDT and LIS programs by the amount of grant and contract monies

Rank	University	Department	Total
1	University of Calgary	Office of Graduate Programs, Faculty of Education	20,000,000
2	University of Massachusetts, Amherst	Learning, Media and Technology Masters Program/Math Science and Learning Technology Doctoral Program	10,700,000
3	University of Louisville	Workforce and Human Resource Education Program	4,500,000
4	Virginia Tech	College of Liberal Arts and Human Sciences	3,500,000
5	George Mason University	Instructional Technology Programs	2,500,000
6	Utah State University	Department of Instructional Technology & Learning Sciences, Emma Eccles Jones College of Education and Human Services	1,800,000
7	University of Missouri-Columbia	School of Information Science & Learning Technologies	1,585,885

(continued)

Rank	University	Department	Total
8	University of Virginia	Instructional Science & Technology Program, Department of Curriculum & Instruction, Curry School of Education	1,500,000
8	New York University	Educational Communication and Technology Program (PhD) and Digital Media Design for Learning Program (MA, Adv. Cert.), Steinhardt School of Culture, Education, and Human Development	1,500,000
10	The University of Texas at Austin	Curriculum & Instruction	1,306,456
11	Georgia State University	Middle-Secondary Education and Instructional Technology	1,250,000
12	Indiana University	Instructional Systems Technology, School of Education	1,237,755
13	The Ohio State University	Cultural Foundations, Technology, & Qualitative Inquiry	1,200,000
14	University of North Carolina, Wilmington	Master of Science in Instructional Technology--Department of Instructional Technology, Foundations & Secondary Education	1,199,546
15	Université de Poitiers	Ingénierie des médias pour léducation	1,000,000
15	Lehigh University	Teaching, Learning, and Technology	1,000,000
15	University of Houston	Curriculum & Instruction	1,000,000
18	University of Memphis	Instructional Design and Technology	750,000
19	University of Georgia	Department of Educational Psychology and Instructional Technology, College of Education	600,000
20	Rutgers-The State University of New Jersey	School of Communication and Information	500,000
20	University of Geneva	TECFA—Master of Science in Learning and Teaching Technologies	500,000
20	Ohio University	Instructional Technology	500,000

Tables 1 and 2 are measures of research productivity. The remaining three tables are more related to teaching than research. The first, Table 3, shows the top 20 programs in terms of the number of full-time faculty. You will notice that the list is ordered by the number of full-time faculty (FT), but number 3, The University of Hong Kong has 110 total faculty members. We decided that full-time faculty was more important than part-time as a measure and so only generated one list for number of faculty. We just thought it would be interesting to see the total number of faculty as well. For example, it is interesting to see The University of Hong Kong and the University of Calgary with very large numbers (110 and 80, respectively) while the University of Georgia and the University of Oklahoma both have 11 full-time faculty and no part-time faculty.Table 3 Top 20 LDT and LIS programs by the

number of full-time faculty (also shown is the total faculty which includes both full- and part-time faculty)

Rank	University	Department	FT	Total
1	Université de Poitiers	Ingénierie des médias pour léducation	25	50
2	Rutgers-The State University of New Jersey	School of Communication and Information	22	37
3	The University of Hong Kong	Faculty of Education	20	110
3	Middle East Technical University	Computer Education & Instructional Technology	20	60
5	Towson University	College of Education	17	22
6	University of Bridgeport	Instructional Technology	14	35
7	Valdosta State University	Curriculum, Leadership, & Technology	12	16
7	Valley City State University	School of Education and Graduate Studies	12	17
7	Anadolu University	Computer Education and Instructional Technology	12	21
7	Fordham University	MA Program in Public Communications in the Department of Communication and Media Studies	12	16
7	Utrecht University	Educational Sciences	12	19
12	University of Louisville	Workforce and Human Resource Education Program	11	25
12	University of Georgia	Department of Educational Psychology and Instructional Technology, College of Education	11	11
12	The University of Oklahoma	Instructional Psychology and Technology, Department of Educational Psychology	11	11
15	Taganrog State Pedagogical Institute	Media Education (Social Pedagogic Faculty)	10	30
15	Hacettepe University	Computer Education and Instructional Technology	10	22
15	Utah State University	Department of Instructional Technology & Learning Sciences, Emma Eccles Jones College of Education and Human Services	10	11
15	University of Missouri-Columbia	School of Information Science & Learning Technologies	10	18
15	Indiana University	Instructional Systems Technology, School of Education	10	22
20	University of Calgary	Office of Graduate Programs, Faculty of Education	8	80
20	University of Massachusetts, Amherst	Learning, Media and Technology Masters Program/Math Science and Learning Technology Doctoral Program	8	10
20	Georgia Southern University	College of Education	8	9

(continued)

Rank	University	Department	FT	Total
20	California State University Monterey Bay (CSUMB)	Master of Science in Instructional Science and Technology (IST)	8	20
20	Western Illinois University	Instructional Technology and Telecommunications	8	11

The next top 20 list is the number of PhD graduates. This list might be a good measure of research productivity as well as teaching productivity. The number of graduates is self-reported. The number of publications is verifiable, so it is interesting to compare who is on both lists. None of the three number ones are on top 20 publications list, but there are five institutions on both lists. University of Georgia, University of Missouri, Indiana University, Florida State University, and Ultrecht University are on both of these lists. The top school in terms of PhD graduates is also on the top school for amount of grant monies, University of Calgary.Table 4 Top 20 LDT and LIS programs by the number of PhD graduates. Please note that the list only goes to 17, but since there was a seven way tie for 17th, the next university would be 24th place

Rank	University	Department	Total
1	University of Calgary	Office of Graduate Programs, Faculty of Education	15
1	George Mason University	Instructional Technology Programs	15
1	University of Bridgeport	Instructional Technology	15
4	Wayne State University	Instructional Technology	11
4	University of Georgia	Department of Educational Psychology and Instructional Technology, College of Education	11
6	University of Missouri-Columbia	School of Information Science & Learning Technologies	10
6	Indiana University	Instructional Systems Technology, School of Education	10
6	Rutgers-The State University of New Jersey	School of Communication and Information	10
6	Ohio University	Instructional Technology	10
6	Middle East Technical University	Computer Education & Instructional Technology	10
11	University of Houston	Curriculum & Instruction	8
11	The University of Texas at Austin	Curriculum & Instruction	8
13	University of Central Florida	College of Education—ERTL	7
14	Florida State University	Educational Psychology and Learning Systems	6
14	Georgia State University	Middle-Secondary Education and Instructional Technology	6
14	Virginia Tech	College of Liberal Arts and Human Sciences	6
17	Texas Tech University	Instructional Technology	5
17	University of Louisville	Workforce and Human Resource Education Program	5

(continued)

Rank	University	Department	Total
17	Utrecht University	Educational Sciences	5
17	University of Virginia	Instructional Science & Technology Program, Department of Curriculum & Instruction, Curry School of Education	5
17	Kent State University	Instructional Technology	5
17	The Ohio State University	Cultural Foundations, Technology, & Qualitative Inquiry	5
17	Anadolu University	Computer Education and Instructional Technology	5

Our last top 20 list is based on the number of master's graduates. In our mind, we might consider this an indication of whether the program is more practitioner oriented than say the number of PhD graduates. Interestingly, University of lCalgary is second here, and is first in both grants and PhDs. So, this differentiation may be meaningless. It is interesting to note that last year we had six schools that produced more than 100 graduates and this year we have seven. While the economy has not done so well, several schools have attracted fairly large numbers of masters students to their programs and successfully graduating some pretty large numbers of graduates. Some people seek degrees during these economic downturns.Table 5 Top 20 LDT and LIS programs by the number of master's graduates

Rank	University	Department	Total
1	University of Bridgeport	Instructional Technology	294
2	University of Calgary	Office of Graduate Programs, Faculty of Education	250
3	Towson University	College of Education	180
4	Rutgers-The State University of New Jersey	School of Communication and Information	161
5	New York Institute of Technology	Department of Instructional Technology and Educational Leadership	130
5	George Mason University	Instructional Technology Programs	130
7	Utrecht University	Educational Sciences	100
8	University of Central Florida	College of Education—ERTL	75
9	Bloomsburg University	Instructional Technology & Institute for Interactive Technologies	60
9	Michigan State University	College of Education	60
11	University of Missouri-Columbia	School of Information Science & Learning Technologies	59
12	Georgia Southern University	College of Education	50
13	Wayne State University	Instructional Technology	48
14	California State University, East Bay	Online Teaching & Learning	45
14	Boise State University	Instructional & Performance Technology	45
16	University of Nebraska at Kearney	Teacher Education	44

(continued)

Rank	University	Department	Total
17	University of Texas at Brownsville	Educational Technology	42
18	University of Georgia	Department of Educational Psychology and Instructional Technology, College of Education	40
18	Lehigh University	Teaching, Learning, and Technology	40
18	University of Central Arkansas	Leadership Studies	40

We acknowledge that any kind of rankings of programs is problematic. We hope you find our lists useful. If you have suggestions, please let us know and we will try to accommodate those changes in future publications of the *Yearbook*. If your program is not represented, please contact one of us and we can add you to the database so that you can be included in future issues.

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Part I
Trends and Issues in Learning, Design, and Technology

Chapter 1
Trends and Issues in Learning, Design, and Technology

Daisyane Barreto and Michael Orey

1.1 Introduction

Lately, the influence of digital technologies in people's daily lives has become unquestionable. Devices, such as computers and smartphones, are now part of individuals' interpersonal communication, work, entertainment, and even learning. Interestingly, learning with these technologies can occur on a formal basis, such as students using simulations to understand complex content in physics, or an informal basis, with learners watching tutorials online to learn the basic skills of an image editing software.

As technology becomes more affordable, the number of individuals acquiring these devices grows. A recent study conducted by *Pew Research Center* indicated that approximately 85% of Americans own a cell phone, 52% a laptop computer, and 42% a game console (Zickuhr 2011). The "easy access" to these technologies (i.e., we are in an era when most individuals have access to everything, everywhere, any time) allows people to quickly communicate, gather information, and learn from one another. Therefore, technology is providing new spaces where learning can happen, which means learning is becoming mobile and can occur in many different ways.

Thus, avoiding technology is not an option anymore, and the question now is how to use these tools in a way that can be effective for education. Educators and scholars should consider not only the affordances of technology, but also the theories and practices to be used to improve educational contexts and technology use. This section of the book will introduce a collection of essays on current topics and issues related to educational technology. The topics vary from aesthetics in instructional design to online videogames. Overall, the purpose of the essays is (a) to present and

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promote a discussion around the latest and future trends in the field as well as (b) to provide examples and cases of the use of technology in education.

In the first chapter, Lori Brown, Linda Lohr, James Gall, and Anna Ursyn explored the importance of aesthetics in instructional design. Although there has been an emergent interest on this topic lately, the authors highlighted that there are still criticisms regarding the value of aesthetics in instructional design. These criticisms are usually grounded on the lack of evidence of aesthetics' effectiveness on learning. Because of this, the authors proposed a framework to investigate aesthetics in instructional design, including five components. Four of these components compose the *design actions* part of an instructional program, i.e., contrast, alignment, repetition, and proximity. The last component of the framework is the *learning experience*, which involves the change or improvement of learners' attitude as a result of the design of the learning content as well as the visual aesthetics of an instructional program. In summary, the visual aesthetics is what makes the learning resources function properly, providing learners with visual elements that will guide and enhance their learning experience throughout an instructional program.

In the second chapter, Ray Haynes and Yonjoo Cho introduced theoretical diversity by exploring the pluralistic theories and approaches applied to current studies in the *Instructional System Technology* (IST) program at the University of Indiana. The studies discussed in this chapter involve: (a) learning strategies grounded on situational perspectives and traditional instructional methods, (b) learners' cognitive structures, intentions, and emotions, (c) design knowledge and practices, (d) digital resources that support educators and preservice teachers in the use of problem-based instruction, (e) unconventional methods and strategies that individuals use to "learn or teach with technology," (f) professional development and career mentoring, and (g) examining previous work and publications to identify trends on the field. In other words, the authors presented an educational environment in which students can find multiple theoretical perspectives and learn to connect theory, research, and practice.

In the third chapter, Gabrielle Garner explored the sociocultural, economic, and technological systems that frame cutting-edge artifacts. The author introduced online gaming as a case study, examining current popular online games and research studies related to online games in the field. The chapter focuses on: (a) general aspects of gaming industry and its development, and (b) game features that can support current trends in the field, such as establishing communities of practice or promoting innovative and collaborative environments.

In the fourth chapter, Abbie Brown and Tim Green examined the recent trends and issues in educational technology. According to the authors, funding availability has been one of the main issues in the past few years for K-12 and higher education settings. In order to overcome this problem, these sectors have been using the available technologies to share open content and resources. Regarding the current trends in the field, electronic books, mobile devices, cloud computing, and augmented reality are technologies to pay attention to as the number of users increases as well as their use in educational contexts.

Given the chapters presented in this section of the book, the current trends for educational technology in 2012 include: (a) investigating visual aesthetics as part of the instructional design process, (b) considering different theories and approaches to guide research and practice, (c) analyzing the sociocultural, economic, and technological systems that bound artifacts such as online games, and (d) an overview of the recent trends and issues in educational settings regarding the purpose and use of technology for teaching and learning. Overall, the use of technology for education should not target exposing students to a wide range of content, instead it should allow students to participate in the production of content as they interact, share, and collaborate with each other. Nevertheless, not all technologies were developed with an educational purpose in mind, which means that integrating technology in educational settings might pose a challenge to educators. That is, teachers and instructors may need to adjust, change, and control technology's use in the classroom according to their educational objectives. Thus, assessing the use and effectiveness of these tools is crucial to better learning environments. Moreover, the design and development of learning experiences must be founded in sound theories and guided by research and practices in the field. In this process, the structure and content of instruction are not the only key factors that contribute to the learning experience. The visual elements of instructional artifacts create a system that allows students to navigate the learning environment and take control of their own learning experience.

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Chapter 2
Where is the *Design* in Instructional Design? The Role of Visual Aesthetics in the Field

Lori A. Brown, Linda L. Lohr, James E. Gall, and Anna Ursyn

Where is the Design in Instructional Design? The Role of Visual Aesthetics in the Field (Design 1989).

This dialogue on the role of visual aesthetics in instructional design opens with a simple query and a simple play on the word—design, with the simple purpose of rousing interest in the idea and, perhaps, intimating a challenge in the nomenclature of instructional design. According to the Oxford English Dictionary (1989), our English word *design* originated with the fifteenth to the sixteenth century French word *desseing* meaning purpose or project. The same source makes note that in modern French, *dessein* is used to indicate "purpose or plan" and *dessin* is "design in art," but English uses the word *design* for both senses. One's prior knowledge and/or preconceived notions of the discipline may lead one to look at this dual semantic nature of design as mutually exclusive, complementary, or for some possibly not worthy of discussion.

Regardless of the perception of aesthetics as integral or negligible in the creation of effective instruction at large, it behooves us to take into account certain unavoidable implications about instructional design due to its association with the term *design.* This is arguably a far better position than an absence of design. For example, Donald Norman has recently noted that the current emphasis on STEM education (science, technology, engineering, and math) could specifically benefit from the addition of a letter D for design (Talbot 2011). Depending upon the diversity of influence, such as prior learning and/or partiality, one may expect a corresponding array of thoughts and practices among prominent scholars and instructional design professionals in interpreting and identifying design in instructional design. However, one may expect reactions to fall within a spectrum of

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opinions that range from the absolute and resolute to the unaware and uninformed. The notions on either end of the spectrum may represent either a positive or a negative reception of design and aesthetics' role in the field. Yet, those who relate design with plan and strategy, more likely, discern the design in instructional design in the procedural tasks based on analysis and evaluation. Whereas, individuals inclined to detect the design in instructional design according to artistic or creative impressions likely have a heightened concern for the aesthetic in the discipline. Their concern may be manifest in terms of best practices and research on designers' consideration and implementation of aesthetic ideals and/or artistic and creative expediencies.

Substantive research on the treatment of visual aesthetics in instructional design compels the building of an historical, theoretical, and practical framework. An exploration of the foundational circumstances and premises of instructional design as they relate to aesthetics, along with current influences, provides the context for a productive and relevant dialogue. In addition, a concise treatise on the theoretical notion of aesthetics from its roots in philosophy, art, and education supports further exploration. A broad understanding and appreciation of the background also establishes the expertise needed to substantiate the thematic categories that comprise the definition of visual aesthetics in instructional design. Ultimately, the detailed and comprehensive explanation of visual aesthetics reveals strong ties to dynamic aspects of the affective domain, thereby indicating its potential contribution to the learning experience.

2.1 Visual Aesthetics in Instructional Design

As a discipline, most agree that instructional design largely originated from the demand for military training materials in the USA due to the crisis of World War II (Reiser 2001a, b). Given the urgency to disseminate vital information among a diverse, often distant, and sizeable population of troops and auxiliary personnel, the majority of designers and theorists in the field may not have considered or made aesthetics a priority in the early stages of the field. The government employed instructional designers who used some of the latest media, such as film, to reach their target audience of learners, the soldiers and other individuals who contributed to the war effort. Behaviorist principles, research, and theories prevailed at the time of World War II and in the years immediately following the war and guided the design and development of much of the instructional materials (Skinner 1954). Many terms, created by wartime instructional designers to service military needs, formed the basis of contemporary instructional designers' educations.

The publication of the taxonomy of Benjamin Bloom (1956) and its subsequent revisions (Anderson et al. 2000) influenced current understanding of the connection between learning experience and aesthetics by means of what Bloom termed the

affective domain. Aesthetics seems to easily fit within the domain of learning that is expressive of learners' feelings and attitudes. While the identification of experiential learning and the corresponding placement of aesthetics as a dynamic feature in the affective domain generated interest and triggered some debate, it may have also contributed to (or been reflective of) modern compartmentalization of aesthetics in instructional design.

Subsequent researchers, such as Jean Piaget, a cognitive psychologist, further affected the precept of aesthetics and instructional design. Piaget insisted that all behaviors and states of being are mutually dependent on both the cognitive and affective (Clark and Fiske 1982). The factors of attention, relevance, confidence, and satisfaction in the ARCS motivation model reflected evolution in the study of the affective domain (Keller 1997). However, Keller (as cited in Shellnut 1998) also noted the absence of motivational considerations among popular design models during the 1980s. Having identified motivation as the neglected heart of the instructional design process, Keller acknowledged several measures related to motivation, such as "curiosity, expectancy, relevancy, and satisfaction" (Shellnut 1998, Significant Contributions section, para. 2). Keller's model does not directly address aesthetics; yet, consideration of the facets that relate to motivation provides insight beyond a strictly functional view of instruction.

Influential constructivist theories in the late 1980s and 1990s challenged instructional designers to consider learners' unique experiences and attitudes (Bull 2009; Huitt 2003). However, attention to all the varied experiential and attitudinal components of learning (including aesthetics) did not develop, as one might expect given the underlying philosophy of constructivist thought.

Investigation on the effects of affective elements ceded to an even stronger surge in cognitive learning theory in the late twentieth century (Baddeley 1992; Pass et al. 2003). Researchers delved into a line of investigation of mental processes that led to twenty-first century advances in function-oriented learning concepts, such as cognitive load theory (CLT) (Pass et al. 2004).

Tracing some of the most discernible influences and prevailing premises in the development of the discipline sheds light on the rationale behind current research agendas. Renewed interest in overlooked or under-investigated ideas points toward possible biases in the field and poses contemporary challenges and future developments.

Certainly, among the significant developments in and aspects of instructional design are the models that exemplify the theoretical pedagogies and inspirations of the authors at a given time. Most models tend to reflect to varying degrees is the generic standard for instructional design models that are based on the principles of analysis, design, development, implementation, and evaluation (ADDIE). Notable in absence is any reference or integration of aesthetics. The most common models neither tie visual aesthetics to instructional design in terms of certain design actions nor in any artistic sense. The want of aesthetics in typical, modern, instructional design models may enlighten a corresponding deficiency in research on the influence of aspects of the affective domain on the learning experience.

2.2 Contemporary Influences

Present-day discourse in academic journals and online editorials reveals a growing interest in support for innovative research that pertains to aesthetics' value and function in the design of effective instruction (Parrish 2009). The ways in which scholars and instructional designers connect aesthetics with the instructional design process are as numerous as they are disparate. Some critics uphold a perception of aesthetics as merely decorative (Wilson 2005) or as an afterthought—something designers may take into account, time and money permitting.

Parrish (2005) notes that aesthetics as a superficial attribute permeates the views of many designers and researchers. Parrish speculates that aesthetics among our society in general and among instructional design enthusiasts in particular is commonly and negatively associated with triviality and shallowness. No identified empirical study has established that attention to design actions (stemming from some aesthetic core) equates to a focus on superficial attributes rather than substantive qualities of effective instruction. Yet, other fields of design embrace and promote visual aesthetics. For example, there does not appear to be any conflict among graphic designers' realization of their goal to present information both effectively and aesthetically.

Visual aesthetics is an obvious and integral part of fashion design, interior design, graphic design, product design, industrial design, etc. The graphic designer translates principles of visual aesthetics into action toward the creation of meaningful, memorable, accessible, effective images (illustrations, graphics, typographic elements, etc.). Other design-based professions consider the achievement of a visual aesthetic to be a principle pursuit with no conflict between the characteristics that denote quality or value in relation to either the aesthetic or the didactic purpose. The use of these fields as examples should not imply that they view design in a uniform way that can be easily translated to learning. However, the pervasive use of design in an aesthetic sense in our culture does create a stark contrast with its educational use. It is also significant to note a growing and persistent expression of interest in visual aesthetics and learning consequences that pertain to affective, experiential, and emotional stimuli.

Simonson and Maushak (2001) are among those who argue on behalf of emotional affect and learning benefits. Parrish (2005) validates their argument, insisting that aesthetics is an integral component of a "high-level instructional design model" that is both ideal and attainable. Those who believe that aesthetics can be and should be a dynamic part of the instructional design process may be comparably small in number. But, their adamancy that visual aesthetics merits investigation and possibly equal consideration, if not total integration, amidst usability and other traditional and tested steps in instructional design models, makes their cause difficult to ignore. However, the case for visual aesthetics in instructional design has not moved forward—beyond recent, demonstrable, stimulation in awareness and interest (Kirschner et al. 2004). Wide-ranging ideas, far-reaching definitions of aesthetics, and lack of a general understanding of the question among leading scholars in the field may also

hinder empirical research and inhibit the productive discussion of potentially beneficial learning outcomes (Hokanson et al. 2008; Parrish 2005; Wilson 2005).

2.3 Aesthetics' Philosophical, Artistic, and Educational Roots

The subsequent treatise on aesthetics from its roots in philosophy, art, and education reveals the extensive value the concept has enjoyed throughout recorded history and establishes it as a pillar of great importance in the study of any creative and design-related field. Aesthetics is a philosophy, a literary and artistic movement, a design ideal, and a practical consideration. The idiom itself derives from the Greek, αἰσθητικός, and conveys man's proper or good understanding through the senses. The etymology of the term is significant for the comprehension of more contemporary definitions and uses in reference to beauty and good taste. The Greek expression, particularly in Aristotle's (Trans. 1996) discussion of aesthetics in his *Poetics*, refers to perception in relation to form. A study of the ancient Greek lexicon inextricably ties perception to the representation, formation, and conception of that which was perceived, whether in reference to a physical (external) object or some concept or the mental (internal) process of perceiving, apprehending, or sensing with proper or "good" understanding. As a persuasive response to Plato's denigration of representative art as an imperfect and, therefore, corrupt copy of reality, Aristotle implicates human emotion within the framework of literary and illustrative art, and ultimately glorifies the act of imitation in both an artistic and metaphysical sense (Else 1986). Aristotle's explanation of aesthetics is valuable in that he places the notion firmly within the realm of human experience and designates certain exceptional sensory qualities of comprehension in its proper form.

Contemporary critics find a more fitting derivation of aesthetics in the discourse of German and British philosophers. Alexander Gottlieb Baumgarten and Immanuel Kant in the eighteenth century and G.W.F. Hegel in the nineteenth century were concerned with aesthetics as judgment in matters of taste and beauty (Baumgarten 1954; Crawford 1974; Hegel 1977). Even Friedrich Nietzsche ultimately identified an undeniable transformational potential in art and the aesthetic (Rampley 2000). The British theorist, Edmund Burke (1968), exerted a profound influence on aesthetic perceptions with his book, *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful*, published in 1757. These philosophers took Aristotle's elucidation of aesthetics, as a profound appreciation, deep perception, heightened awareness through proper interaction of the senses, and delivered the notion, smoothly, first into the psychological realm and second into the contemporary conversation in the sphere of formal educational discourse. They discussed the promise of aesthetics in relation to the beauty of proper or good mental processes and physical responses. John Dewey's discussion of aesthetics in the early twentieth century extended the psychological and emotional perimeters of aesthetics and knowledge found in early German philosophy by relating aesthetic feelings to an experiential ideal, a mental response to feelings generated from encounters perceived as beautiful or unattractive (Dewey 1934). Dewey insisted upon the limitless

potential of aesthetics beyond the conventional delineation in areas such as fine art, basing aesthetic appreciation on principles of subjectivism.

Currently, Patrick Parrish, a staunch advocate of aesthetics as a central and consequential concern in the field, breathes new life into much of Dewey's work and develops a compelling argument that instructional design research should put aesthetic ideals into practice, thereby realizing the opportunity to perceive the hitherto theorized learning benefits of instruction designed as aesthetic experiences. Parrish (2005) defines aesthetic experience as "a quality that exists equally in the experiences of everyday life as in the fine arts, and the one that certainly applies to the learning experiences we design as instructional designers" (p. 3).

Enthusiasts of aesthetics in instructional design corroborate recent denouncements of the field's inattentiveness to aesthetics by contextualizing it amidst the importance and interest garnered in the past. Evidence of the dissemination of aesthetics in early Aristotelian philosophy throughout succeeding centuries survives in the consistent depiction of it as a genuine sensorial experience, including response to stimuli that is emotional, attitudinal, motivational, etc. Traditionally, the quality or goodness of an aesthetic experience relates to a proper sensorial understanding, considered beautiful for the fulfillment of its potential and actualization of its natural purpose. Numerous areas of study, including psychology, fine art, industrial art, graphic and instructional design, etc., depend upon the precepts set forth in Aristotelian aesthetics to achieve more comprehensive and gratifying experiences (Wilson 2005). Comprehension and implementation of these philosophical principles help bring about an emotional experience or enhanced understanding when an individual encounters or interacts with some object or stimulus that involves the senses.

It is also possible to trace the aesthetic experience in relation to education (Dewey 1934; Parrish 2005, 2009). Wilson (2005), directly, connects instructional designers to the task of designing not only educational materials but also to educational experiences. His regard for aesthetics as "the immediate experience of learning" prompts an appeal to instructional designers that they "move beyond purely technical issues of theory application and enter into the realm of aesthetics" (The Fourth Pillar section, para. 1). It is within this sphere of influence that instructional designers have the opportunity to transform "available resources to help learners have a particular kind of effective learning experience" (The Fourth Pillar section, para. 1).

2.4 The Role of Visual Aesthetics in a Design-Dense Definition of Instructional Design

The preceding qualifies aesthetics as a cultural and historical ideal that permeates many contemporary disciplines. This background information provides a basis upon which we may construct and expand an appreciation of aesthetics in the field. Aesthetics, as a design action, principle or ideal, endures and advances in literary, philosophical, theoretical, and pedagogical areas. The long and productive tradition of aesthetics in other subjects, some with aims and activities comparable to instructional design, substantiates the call of aesthetics' advocates in the field to investigate

its place in instructional design. Such an investigation needs to proceed, scientifically, and requires a breakdown of specific components of the definition proposed for visual aesthetics so that scholars and instructional design practitioners may deliberate, discuss, and come to an understanding of what aspects require further discussion or debate, and what aspects form the substance and merit of consequent research.

There is a need to bring together the various pieces to define the experience of visual aesthetics in instructional design. A delineation of the concept by identifying relevant language of the field offers critics and researchers a starting point to investigate visual aesthetics in an empirical study. Five thematic categories stand out and encompass the definition of visual aesthetics we propose: learning experience and four design actions—contrast, alignment, repetition, and proximity (CARP). The CARP design actions provide broad categories that are among the most universally recognized visual actions that designers can use to affect instructional material. If the theories that build the definition of visual aesthetics in instructional design hold true to their promise, designers realize the aim of creating effective instruction when the design decisions they make lead to proper use of design actions (CARP) that stir learners' senses. The emotive sensory experience is the effect of visual aesthetics in enhanced instructional material.

The thematic categories of visual aesthetics and the language classified within do not form the basis for determining the attractiveness of some educational unit, nor do they indicate the extent to which some arbitrary standard of beauty may confirm an aesthetic instructional design. CARP principles pertain to designers' deliberate utilization of contrast, alignment, repetition, and proximity or secondary actions toward the design of an enhanced learning experience. Design actions are distinct from other principles and considerations in the instructional design process in intent and effect. Contrast, alignment, repetition, and proximity produce visible changes or movements that designers apply "to instructional information or to the elements of information assembled to convey an idea" (Lohr 2008, p. 80).

The four key design actions of CARP are not new to designers. Individually, they have long histories in the visual arts. Williams (2008) brought the application of contrast, alignment, repetition, and proximity as a group to the attention of designers in the first edition of *The Non-Designer's Design Book* in 1994. Lohr (2008) directed them specifically to visual learning experiences. Both Williams (2008) and Lohr (2008) provide the basis for considering CARP design actions as definitive expressions of visual aesthetics in the field. Quantifying successful and visually stimulating educational material, relating it to visual aesthetics, and demonstrating consequential enhanced learning experience calls for a straightforward approach.

2.5 Contrast

"Contrast is a tool the designer uses to draw attention to the important features of a message and make the figure/ground distinctions clear" (Lohr 2000b, p. 48). Contrast for an instructional designer is an action that results in the distinction of elements on a page or screen by causing certain aspects either to intensify to diminish visually.