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TEACHING EVIDENCE-BASED DESIGN TO THE BEGINNING DESIGN STUDENT: EDUCATOR PERCEPTIONS ABOUT INCORPORATING RESEARCH IN BEGINNING DESIGN EDUCATION

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TEACHING EVIDENCE-BASED DESIGN TO THE BEGINNING DESIGN STUDENT: EDUCATOR PERCEPTIONS ABOUT INCORPORATING RESEARCH IN BEGINNING DESIGN EDUCATION

By

Deborah Rushen Dunlap

A THESIS

Presented to the Faculty of
The Graduate College at the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Master of Science

Major: Architecture

Under the Supervision of Professor Betsy S. Gabb

Lincoln, Nebraska
August, 2011
Educators’ perceptions influence academic protocols regarding the level at which evidence-based design is introduced to design students. Evidence-based design, a research methodology based on quantitative and qualitative inquiry that informs design decisions, permeated healthcare design to the point that the two are almost synonymous (Hamilton & Watkins, 2009; Nussbaumer, 2009). As this research based approach spreads throughout the profession, multiple specialty areas in architecture and interior design adopt evidence-based design into their methodologies (Hamilton & Watkins, 2009). These “developments in design practice now impinge directly upon education” (Zuo, Leonard, & MaloneBeach, 2010, p. 269). Teaching evidence-based design to design students prepares entry-level designers for the workplace (Nussbaumer, 2009).

This research study explores and explains educator perceptions about teaching evidence-based design to beginning design students through surveys administered to National Conference on the Beginning Design Student 2011 attendees and Interior Design Educators Council members. Results showed numerous views. Those in favor of introducing evidence-based design to beginning design students present the method along
with the design process. These educators believe evidence-based design forms a basis for
design and is an important research/design methodology. Educators against introducing
evidence-based design to beginning design students believe the method requires too
much information to cover at the beginning level and stifles creativity. Other educators
either had little knowledge or were unaware of evidence-based design.

Most educators surveyed teach human factors, ergonomics, anthropometrics, and
Proxemics, but are not aware that evidence-based design includes these topics. Many
state they have no plans to incorporate evidence-based design into their beginning design
courses because it is taught in upper-level courses. Educators conveyed openness toward
introducing evidence-based design to beginning design students, especially if proven
beneficial to the students. Most educators rely on colleagues and teaching publications to
learn about evidence-based design. Overall, educators perceive the most significant
factor regarding future introduction of evidence-based design to beginning design
students to be faculty related. This research acknowledged limitations and future
research directions.
Dedication

This work is dedicated to my parents, Deanna and Gary, whose love and support I still feel even though they are no longer with me; and to my husband, Edward, whose encouragement and belief in me sustained me throughout this process.
Acknowledgements

Thanks to my standard poodle, Shadow, for his loyalty while he stayed by my side at my desk for many hours.

Thanks to my friends and family, who understood and patiently waited for me to finish.

Special thanks to my grandparents, great-aunts and great-uncle, who always told me I could do anything I wanted to do in life; and more importantly, loved me unconditionally.

Very special thanks to Betsy Gabb, for her constant support from the beginning, patience with my never ending questions, and ability to make the complicated simple.
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Chapter I. Statement of the Problem

The interior design profession constantly evolves as societal needs develop and change. As interior design education adapts to new developments in the profession a significant challenge emerges for interior design educators. The need to prepare undergraduate students for the continuously changing profession they are about to enter starting from the beginning design student and progressing as students advance to upper level design courses presents conflicting views on the best approach at each stage of learning.

One recent development in the interior design field is a focus on evidence-based design (EBD); a research methodology currently revolutionizing the way interior designers work and design. Research or evidence that supports an outcome-driven approach to designing the built environment is used to measure successes, share knowledge, and gain credibility (Cama, 2009; Hamilton & Watkins, 2009). Some interior design education programs have begun teaching evidence-based design at the undergraduate level; adding more rigor to student designs through research while increasing the amount of content knowledge required for design students in general.

All design students have a vast amount of content to learn to be competitive as an entry-level designer. Interior design educators regularly evaluate and revise course content and materials to ensure alignment with industry expectations. Incorporating evidence-based design in the interior design curricula produces varied opinions about when it should be included or even if it should be included at all.
According to Dickinson, Anthony & Marsden (2009), many interior design educators value research, but studies suggest they question whether introduction of evidence-based design to the undergraduate level design student is necessary. Skepticism about whether research is a necessary skill in practice exists (Dickinson et al, 2009). As the profession grows more complex, the necessary content required in the undergraduate interior design program increases (Guerin & Thompson, 2004). Without any comparable decrease in these requirements undergraduate programs cannot possibly cover all required areas (Guerin & Thompson, 2004).

The beginning design student faces the additional difficulty of learning this multitude of new concepts as they adapt to college life and the unique characteristics of design study. The sheer amount of required content combined with the relatively short amount of time to cover it coupled with the skepticism about whether research is relevant in practice suggest that some interior design educators resist incorporating evidence-based design at the undergraduate level.

Inversely, some interior design educators insist to delay introduction of the value of research to the profession until students reach an advanced level or to not address it at all may interfere or delay cognitive development regarding research process (Carmel-Gilfilen, 2006; Dickinson, Marsden, & Read, 2007; Guerin & Thompson, 2004; Oxman 2004). According to Kroelinger (2007), “advocating a sound research basis for design is essential. Our students need it and their future clients expect it (for accountability and
assessment of design results)….These issues are equally important to undergraduate students at an entry level in their academic program” (p. 16).

Chapter II. Literature Review

An examination of literature about teaching evidence-based design to beginning design students uncovered hardly any significant research combining the topics. Research about teaching and learning is plentiful. A great deal of information about evidence-based design is available as new research continues to unfold. Information about teaching design, and especially teaching beginning design and beginning design students, is limited, but literature combining teaching, evidence-based design, and, beginning design students is virtually non-existent.

Evidence-Based Design

Definition

Hamilton and Watkins define evidence-based design (EBD) as “a process for the conscientious, explicit, and judicious use of current best evidence from research and practice in making critical decisions, together with an informed client, about the design of each individual and unique project” (Hamilton & Watkins, 2009, p.9). Nussbaumer (2009) states “EBD is an informed approach to design where designers intentionally base their decisions on quantitative and qualitative research” (p. 4). Understanding what makes this research credible is required as the use of credible data influences the design process.
Hamilton and Watkins (2009) identify sustainability as being “founded on evidence” (p. 39). Nussbaumer (2009) identifies the Design Process as “the application of EBD” (p. 4); and, human factors, ergonomics, anthropometrics, Proxemics, Wayfinding, and Universal Design as “central to the development of evidence-based design” (p. 126). For purposes of this research, the definition of evidence-based design includes human factors, ergonomics, anthropometrics, Proxemics, sustainability, the Design Process, Wayfinding, and Universal Design as components of the definitions provided by Hamilton and Watkins (2009); and Nussbaumer (2009).

The steps in the evidence-based design process (Table 1) as stated by Hamilton and Watkins (2009) are: “1) identify the client’s goals; 2) identify the firm’s goals; 3) identify the top 3-5 key design issues; 4) convert design issues to research questions; 5) gather information (benchmark examples, literature sources, internal studies); 6) critical interpretation of the evidence; 7) create evidence-based design concepts; 8) develop hypothesis; 9) select measures” (p. 210).
<table>
<thead>
<tr>
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<td>1</td>
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<td>3</td>
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<td>4</td>
<td>Convert Design Issues to Research Questions</td>
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<td>5</td>
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<td>Develop Hypothesis</td>
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<td>Select Measures</td>
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*Table 1: Evidence-Based Design Process.*

Nussbaumer (2009) explains that evidence-based design is conducted “not only through research summaries and journal articles, but also through examination and analysis of precedents” (p. 56). “Design precedents (also called precedents studies or case studies) include completed design projects of various types” (Nussbaumer, 2009, p. 76). Research establishes precedents and assessed future needs. “Design precedents research will stimulate conceptual ideas, locate trends, and show recent design examples” (Nussbaumer, 2009, p. 260). Evidence collected can inform the design and change the
direction or any and all aspects of the project; this is the way evidence-based design is created (Nussbaumer, 2009).

**Background and Beginnings**

In a paper presented at the Fourteenth National Conference on the Beginning Design Student, Sofranko (1997) states that “since the Enlightenment, rational discourse and empirical proof have defined the modern” (p. 56). Even though the utilization of reason and empirical evidence and evidence-based approach to design is not new, the term evidence-based design only recently surfaced more often. Evidence-based design is “based on its conceptual predecessor, evidence-based medicine (EBM)” (Sailer, Budgen, Lonsdale, Turner & Penn, 2008, p. 119/2). Evidence-based medicine uses current best evidence to make decisions about the care of individual patients (Sackett, Rosenberg, Muir Gray, Haynes, & Richardson, 1996).

The medical background from which evidence-based design is rooted causes it to seem only natural that this methodology would first grow popular in the field of healthcare design. The shift toward evidence-based design in healthcare design as it adopts new procedures will improve quality and safety (Cama, 2009). A design with a measurable outcome presents significant benefits for designers, clients and users.

The process of evidence-based design allows the designer and client to discover the unique design solution that best solves their unique design problem (Hamilton & Watkins, 2009). Evidence-based design does not mean rigid rules and loss of creativity
(Hamilton & Watkins, 2009). On the contrary, it may result in the “demand for higher levels of creativity as the designer responds to the challenges raised in response to new and ever-changing information” (Hamilton & Watkins, 2009, p. 14-15).

Hamilton and Watkins (2009) caution “those who look to evidence-based design for easy, ready-made answers to complex problems are bound to be disappointed” (p. 10). The best available evidence is not static or fixed. “The method is a process by which a designer and his or her client can find their own answers” (Hamilton & Watkins, 2009, p. 10). Continuous revision of information as new research is discovered makes the final design solution the best for that specific project at that specific moment in time (Hamilton & Watkins, 2009).

Designers must stay current and not rely on outdated information or ignore new information (Hamilton & Watkins, 2009). Utilization of thinking skills (critical thinking and design thinking) may help to keep up with the most current, credible evidence. Designers must remain open to finding information from unexpected sources that are found in places that are not typically considered (Hamilton & Watkins, 2009).

**Human Factors**

“Research that relates to human factors is essential to the well-being of the client and users of the space” (Nussbaumer, 2009, p. 126). Fundamental to the development of evidence-based design is research into the physiological, psychological and sociological needs (Nussbaumer, 2009). “Physiological needs are physical in nature and relate to
human and body requirements” (Kilmer & Kilmer, 1992, p. 189). Anthropometrics, the scientific measurement of the size and proportions human body (Kilmer & Kilmer, 1992); and ergonomics, an applied science that studies the way human beings function in their environment (Kilmer & Kilmer, 1992); both form physiological needs and relate to evidence-based design. This crucial data determines spatial needs for clients and end-users (Nussbaumer, 2009).

Psychological and sociological needs relate to feelings and interactions with other users and cannot be measured (Kilmer & Kilmer, 1992; Nussbaumer, 2009). Each person requires a certain amount of personal space around them which will differ from person to person depending on culture or experiences (Kilmer & Kilmer, 1992; Nussbaumer, 2009). “Proxemics is the study of the relationship between humans in a particular culture and their use and perceptions of space” (Hall, 1966; Nussbaumer, 2009, p. 130). The four distance zones detailed in Proxemics include intimate, personal, social, and public; and establish guidelines for activity and distance between people in a space (Kilmer & Kilmer, 1992). Designers utilize these guidelines or zoning evidence when designing environments for the spaces to be successful to the users.

“One important aspect of human factors is to create space using universal design” (Nussbaumer, 2009, p. 138). Universal design accommodates every user of an interior space “so that all users of a space may over through and work in all spaces comfortably” (Nussbaumer, 2009, p. 136). Universal design provides consideration for a wide-range
of users who may be elderly, have physical disabilities, or have no limitations at all but does not emphasize to the limitations of those who do have them.

Wayfinding directs people through unfamiliar areas, specifically a primary circulation path leading to various destinations (Nussbaumer, 2009). Universal design impacts Wayfinding through the need to provide access to everyone. Visual cues, signage, directories, use of color and light all provide direction (Nussbaumer, 2009). Evidence on universal design and Wayfinding informs the design from research projects and previous applications.

**Sustainability**

Hamilton and Watkins (2009) describe the relationship between sustainability and evidence-based design as “symbiotic” (p. 39). Prior to The Industrial Revolution most structures were built using local materials, wind or water energy, and human or animal labor (Hamilton and Watkins, 2009). Now after The Industrial Revolution as sustainable design has resurfaced and become more prominent in the mainstream, sustainable design is still associated with increased cost (Hamilton & Watkins, 2009). Sustainable design met resistance due to perceived cost and skepticism. Early supporters relied on evidence in order to sound credible (Hamilton & Watkins, 2009). New articles continue to surface that provide evidence for designers to apply sustainable design principles to projects (Nussbaumer, 2009).

**Significance of Research in Interior Design**
The significance of evidence-based design or research in interior design lies in the bridging of the two schools of thought that exist about the interior design profession. One school of thought indicates the field is based on social sciences and the other indicates it is based on art (Robinson & Parman, 2010). The National Council for Interior Design Qualification (Definition of Interior Design Page, 2011) currently defines interior design as:

“Interior design is a multi-faceted profession in which creative and technical solutions are applied within a structure to achieve a built interior environment. These solutions are functional, enhance the quality of life and culture of the occupants and are aesthetically attractive. Designs are created in response to and coordinated with the building shell and acknowledge the physical location and social context of the project. Designs must adhere to code and regulatory requirements, and encourage the principles of environmental sustainability. The interior design process follows a systematic and coordinated methodology, including research, analysis and integration of knowledge into the creative process, whereby the needs and resources of the client are satisfied to produce an interior space that fulfills the project goals.

Interior design includes a scope of services performed by a professional design practitioner, qualified by means of education, experience and examination, to protect and enhance the health, life safety and welfare of the public.”

According to Robinson and Parman (2010), “for many forward-thinking people, the boundary between art and science is blurred or nonexistent” (p. xxii). Art represents the creative aspect of interior design while research is related to the science aspect. The role of researchers in practice is expanding and progressive design firms are embracing researchers in their practices, especially evidence-based design (Bosch and Nanda, 2011). These firms recognize the value of research in practice.

The Value of Research
Evidence-based design is associated with research (Dickinson et al, 2009). The value of research lies in the fact that research leads to discovery of new knowledge and expands the body of knowledge in a field (Dickinson, Marsden & Read, 2007; Dickinson et al, 2009; Roth, 1999). “Interior design should not only value what research brings to the design process, but should also recognize that research findings are one facet that contributes to the body of knowledge in a given field” (Marshall-Baker, 2005). “The purpose of evidence-based design is to conduct that research, report the findings, and apply the findings to the design solution” (Nussbaumer, 2009, p. xix). As the value of research becomes understood, the role of researchers in design practice continues to increase (Bosch & Nanda, 2011). Research that adds to the body of knowledge in the design field can be used by designers to produce improved design solutions.

**Improved Design Solutions**

Critical thinking is necessary to find the best design solution as the evidence discovered during the research process rarely offers a precise solution for each client’s unique design problem (Hamilton, 2004). Meeting project objectives requires specific research. Designers use critical thinking to evaluate evidence and use design thinking to determine the best approach for improved future results for their clients. Once located, the research findings are reported and applied to the design solution resulting in quality design based on quality research.

The focus on using quality information to solve design problems is for the design student and for the design professional. Designers are accustomed to doing research through
gathering information; part of the programming phase of the design process. Using research findings to improve design decisions comes naturally. Interior design decisions impact outcomes (Nussbaumer, 2009).

Producing design solutions that meet the client needs and requirements is the goal of the interior design and design firm. The ability to express design concepts to colleagues and clients using documentation of intended design results in the form of predicted outcomes is extremely powerful, lending credibility to the design, the designer, the design firm and the profession (Cama, 2009; Hamilton and Watkins, 2009). Focus on a collection of credible data to illustrate the positive results associated with projects might give consideration to being more credible with current clients and more attractive to perspective clients (Hamilton and Watkins, 2009).

Accessing the current best credible information through research is what evidence-based design is based upon. Adding rigor to what is already done can produce better results, competitive advantage and increase client confidence (Hamilton 2004). “Research has become an important component throughout the design process” (Nussbaumer, 2009, p. xix). Incorporating evidence-based design throughout each phase of the design process leads to better design solutions or outcomes for the designer and the client.

**The Design Process**

According to Roth (1999), “design research is a more recent phenomenon that has yet to establish universal standards related to process, presentation, and evaluation” (p. 18).
Research for new evidence can be conducted throughout the design process (Nussbaumer, 2009). Evidence-based design aligns with the steps in the design process (Table 2) which designers already have fundamental understanding.

**Table 2: The Design Process.**

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<tr>
<td>Initial Client Contact</td>
<td>Programming</td>
<td>Continue to analyze facts</td>
<td>Select and refine</td>
<td>Bidding process</td>
<td>Order/Construction</td>
</tr>
<tr>
<td>Scope of Services and/or tasks</td>
<td>Recognize Problem</td>
<td>Define Problem</td>
<td>Generate ideas and brainstorm</td>
<td>Develop drawings, details, specifications</td>
<td>Evaluate</td>
</tr>
<tr>
<td>Commit to project</td>
<td>State the goals and objectives</td>
<td>Sketching of ideas, plans, details, etc.</td>
<td>Specifications written</td>
<td>Construction drawings</td>
<td>Ordering process</td>
</tr>
<tr>
<td>Accept the project</td>
<td>Gather information: the facts</td>
<td>Develop preliminary plans</td>
<td></td>
<td></td>
<td>Construction</td>
</tr>
<tr>
<td>Contract written</td>
<td>Interview clients, use surveys, questionnaires, conduct observations, etc.</td>
<td></td>
<td></td>
<td></td>
<td>Supervision</td>
</tr>
<tr>
<td>Retainer obtained</td>
<td>Research to develop a strong evidence base</td>
<td>Analyze facts</td>
<td>Organize the information and develop program requirements</td>
<td>Continue to analyze facts</td>
<td></td>
</tr>
<tr>
<td>Analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Synthesis</td>
</tr>
</tbody>
</table>

The design process is a systematic and logical method involving analysis and synthesis used by designers to solve design problems (Nussbaumer, 2009). Regardless of the size of the project, the design process includes five phases: programming, schematic development, design development, contract documentation, and contract administration (Piotrowski, 2004). Each phase builds on the previous one as the project progresses until it is completed. Phases often overlap with parts of one phase occurring while then next phase begins. Evidence-based design can easily be applied to each phase of the design process and to each type of design whether it is commercial or residential.

The programming phase consists of the initial client contact and information gathering (Nussbaumer, 2009; Piotrowski, 2004). Research fits within this phase as information is gathered from the client and evidence from credible sources can be used to develop a strong base. Facts and evidence continue to be analyzed as concepts are generated in the schematic or concept development phase. In design development, concepts are selected and refined while drawings and details are specified (Nussbaumer, 2009; Piotrowski, 2004). New evidence or research can still be incorporated during this phase. Code issues, systems information, furnishings and material information are a few examples of research that is incorporated at this point in the process.

The contract documentation phase is where implementation begins with the bidding process, construction drawings, and written specifications (Nussbaumer, 2009; Piotrowski, 2004). New research or evidence may be included during this phase.
depending on bid requirements, drawing revisions, and changes in specifications. The final phase, the contract administration phase, may require new research when substitutions are needed if material orders will not arrive in time to meet schedule (Nussbaumer, 2009; Piotrowski, 2004). Final evaluations and punch lists may require additional research. Finally, the post occupancy evaluation done during this phase will likely create a need for new research depending on the findings, illustrating the cyclical nature of both the design process and evidence-based design research.

Post-occupancy evaluations (POE) “identify problem areas in existing buildings, to test new building prototypes and to develop design guidance and criteria for future facilities” (Preiser, 1995, p. 19). Measuring the success of a well-designed building or space is usually subjective (Cama, 2009). Using credible research to evaluate, document, and share findings from a POE will lead to a more rigorous evaluation to create better design solutions in future projects, thus building upon the available credible information for when the process starts over at the programming phase.

**Multiple Building Types**

Hamilton and Watkins (2009) contend that evidence comes from research and practice and that evidence-based design is relevant to multiple building types. Bosch and Nanda (2011) agree that evidence-based design can be applied to “virtually any building type” (p. v). Healthcare design has embraced evidence-based design to the point that it has the necessary requirements to become a specialized field (Hamilton & Watkins, 2009).
Graduate programs with a focus on healthcare design and research already exist while new programs are emerging (Hamilton & Watkins, 2009).

Hamilton and Watkins’ (2009) *Evidence-based Design for Multiple Building Types* dedicates entire chapters to individual building types to explain how evidence-based design applies to each building type, illustrating how evidence-based design is not just limited to healthcare design. For example, in places of assembly, such as religious buildings or performance halls, evidence shows that lighting, scale, and acoustics are key components in the design (Hamilton and Watkins, 2009). Nussbaumer (2009) states that “if applied to other types of design—such as office, hospitality, retail, and beyond—designers will improve employee satisfaction, increase productivity, increase sales, and benefit the field and their clients in an ever-growing variety of ways” (p. xix).

**Interior Design Education**

*A Unique Field of Study*

“Design education is unique amongst fields of study— it is an integrator and connector of knowledge, forming links between ideas, information, people, and objects” (Ankerson & Pable, 2008, p. 6; Buchanan, 2000). Ankerson and Pable’s (2008) *Interior Design: Practical Strategies for Teaching and Learning* states that interior design educators recognize the specific challenges of interior design education as “it could well be argued that the nature of interior design education warrants a collection of content dedicated to its unique needs” (Preface Page). “Interior design and its attendant education does in fact differ from other fields in that it is the only profession that addresses physical
environment at an intimate personal level” (Ankerson & Pable, 2008, p. 7; Niederhelman, 2001). Understanding the differences along with what interior design education has in common with other disciplines may help explain these unique needs.

Ankerson and Pable (2008) point out that “interior design is intertwined with many disciplines such as psychology, anthropology, ergonomics, history and sociology” (Preface Page). The connections with these areas and others create a need for designers to understand designing physical environments and the people who use them. “To be livable, an interior first should fulfill its intended function of satisfying the needs of the people for whom it is designed” (Allen, Jones, & Stimpson, 2004). Research that relates human factors is essential to the well-being of the client and end users (Nussbaumer, 2009).

Some interior design programs emphasize art and some emphasize science, but art-based schools address technical information like human factors and computer-aided design while research-based schools address history, theory and aesthetics (Robinson & Parman, 2010). Evidence-based design does not mean rigid rules and loss of creativity (Hamilton & Watkins, 2009). On the contrary, it may result in the ‘demand for higher levels of creativity as the designer responds to the challenges raised in response to new and ever-changing information’ (Hamilton & Watkins, 2009, p. 14-15). The emphasis on information to help solve design problems is the common thread of both programs (Robinson & Parman, 2010).
Teaching and Learning Interior Design

While references addressing the differences are beginning to surface, teaching and learning interior design has many similarities to other disciplines that are addressed by generic educational references and programs. Generally, the very nature of teaching itself perpetuates the status quo. In Lortie’s (1975) *Schoolteacher* the author takes a sociological look at schools and teaching in the United States and discusses the teaching profession illustrating that it does not lend itself to rapid change due to social, economic, and professional aspects of teaching.

Most teachers tend to teach the way they were taught therefore changes in methodology can be slow. The idea of apprenticeship may contribute to this slow pace as “there are ways in which being a student is like serving an apprenticeship in teaching” (Lortie, 1975, p. 61). While this often applies to interior design educators, constant changes in the interior design profession and the rapid pace of change in teaching interior design requires interior design educators to remain current with the industry.

According to Cuban (2009) most teachers use the blended approach toward teacher-centered and student-centered learning. This statement by Cuban (2009) “How teachers teach is anchored in what they teach” (p. 50), directly relates to interior design education. “Good teaching of content requires knowledge of the discipline and particular pedagogical moves native to the subject matter” (Cuban, 2009, p. 52). This statement emphasizes the need for interior design educators to have a solid understanding of the interior design profession as well as teaching methods specific to interior design.
According to Cliff and Woodward (2004) knowledge of the subject may come from professional, historical, or philosophical backgrounds. Understanding more about how teachers view and acquire knowledge may reveal similarities and differences among various disciplines. Pable (2009) notes what she calls “this ‘gnawing problem’ regarding how interior designers know and accept (or reject) knowledge is subtle but pervasive in their daily activities” (p. vi). Teaching interior design is a distinct, discipline-specific subject that deals with conceptual ambiguity. To understand more about how interior design educators come to knowledge, what is being taught and how it is being taught may deliver improved results in the classroom.

“Most teachers, as this study and other inquiries into classroom instruction have established, are pedagogical pragmatists who combine both teaching traditions in daily practice” (Cuban, 2009, p. 50). Whether teachers transfer information to students sitting in neat rows facing the teacher or facilitate learning with teams of students arranged in groups, the teacher decides the approach used in their classroom. “Thus teachers invent, choose, and create lessons and activities even amid all of the classroom constraints within which they work daily” (Cuban, 2009, p. 52). Consistent with this concept, the interior design classroom or studio can vary from one day to the next or one moment to the next depending on what lesson needs to be accomplished at that specific time.

Teaching is complex and these correlations “do not tell us what causes what to happen in teaching and learning or what we can do to get the desired outcome” (Cuban, 2009, p.
Landing that first job appears to be a logical desired outcome to start with. “If educators provide students with a format and basis for research that develops EBD, entry-level interior designers will bring greater knowledge to their employers” (Nussbaumer, 2009, p. xix). “The ability to gather substantive information from institutions and individuals around the world on topics related to design research could be an invaluable resource for educators, students, and practitioners” (Roth, 1999, p. 25).

**Foundation Curricula**

Beginning design education is an area that some interior design educators gravitate toward. Their interest lies in the specific challenges, development, and pedagogies associated with teaching the student who is at the introductory level in their design matriculation. According to Boucharenc (2006) “It is generally accepted that this form of teaching and learning develops the creative spirit of students by introducing them to shapes, colours, rhythm, and light outside of any academic approach, and by allowing them to discover a personal bond with various materials” (p. 1-2).

“Basic Design”, which is sometimes referred to as “Foundation Courses” or “Core Courses”, became the pedagogical basis for the classical design and architecture schools, the Vhutemas, the Bauhaus, the “Chicago Bauhaus”, and the Ulm School (Boucharenc, 2006, p. 2). This teaching methodology underwent many changes since its start in the 1920’s and was all but lost after the 1960’s. Since the mid 1990’s the Basic Design methodology has experienced a revival.
A significant number of design schools consider the pedagogy of Basic Design teaching as a “very important component in design education programs around the world” (Boucharenc, 2006, p. 18). Linking the fundamentals of design knowledge covered in Basic Design teaching with not only the creative but also the technical aspects of professional design practice makes logical sense (Boucharenc, 2006). Curriculum reviews that consider the classical schools’ influence on Basic Design pedagogy and update these methods to meet current requirements of design education need further research (Boucharenc, 2006).

The Beginning Design Student

Definition

The beginning design student is typically the first year student and sometimes also the second year student enrolled in a design program in postsecondary education. For purposes of this research, the beginning design student will be defined as first and second year students enrolled in a Council for Interior Design Accreditation (CIDA) accredited design program. Students at this level are in the process of learning Basic Design, also known as Design Fundamentals or Foundation Courses or Core Courses.

According to CIDA Professional Standards (2011), accredited design education programs must have goals that meet the requirements for entry-level interior designers. About curriculum CIDA Professional Standards (2011) states, “the curriculum follows a logical sequence and achieves program mission and goals” (p. II-12). Standards require curricula to address everything from critical thinking, professional values, and global
context to human behavior, design process, collaboration, and business practices. Core design and technical knowledge standards include history, space and form, color and light, furniture, fixtures, equipment, and finish materials, environmental systems and controls, and interior construction and building systems (CIDA Professional Standards, 2011). These standards are introduced to the beginning design student and built upon as students advance through their matriculation.

In many disciplines but especially in design education, “the curriculum should be structured to facilitate and advance student learning” (Demirbas & Demirkan, 2003, p. 437). “The programme must provide cores to be interrelated and reinforced throughout the curriculum” (Demirbas & Demirkan, 2003, p. 437). “Beginning design must be rigorous in thought and deed in order to bring the students into a competency level and freedom of thought in visual matter that maybe called ‘design thinking’ ” (Markovich, 2009, p. 157). Both of the following program examples clearly have programs that introduce standards to the beginning design student and build upon those standards as students advance.

**Program Examples**

Two accredited universities were selected from the Council for Interior Design Accreditation website as examples to illustrate beginning design programs (CIDA Accredited Programs, 2011). After review of various accredited programs nationwide, these two were chosen because of the detailed information provided on their websites.
Winthrop University

Winthrop University located in Rock Hill, South Carolina, awards the Bachelor of Fine Art in Art with a concentration in interior design and is CIDA accredited (Winthrop University, Interior Design Page, 2011). The program offers interior design foundation curriculum (Figure 1: Winthrop University, Interior Design Degree Checklist, consisting of an introduction to interior design course, Interior Design: Fundamentals; an introduction studio course, Interior Design Studio: Fundamentals; Spatial Analysis and Theory I; and Interior Design Presentation Techniques I; in the first year (Winthrop University, Interior Design Degree Checklist Page, 2011).

The first semester introduction course familiarizes students with the design profession usually through discussion of professional associations, licensing, the design process, design specialty areas, employment opportunities, and education preparation required along with accreditation standards (Winthrop University, Interior Design Course Descriptions Page, 2011). The introduction studio course introduces the applied two- and three-dimensional design elements and principles (Winthrop University, Interior Design Course Descriptions Page, 2011).

In the second semester Spatial Analysis and Theory I course, students continue to explore and learn to manipulate the elements and principles of design while applying them to newly introduced concepts such as human factors, human scale, Proxemics, and anthropometrics (Winthrop University, Interior Design Course Descriptions Page, 2011). The Presentation Techniques I course includes manual production of industry standard
types of drawings used by interior designers (Winthrop University, Interior Design Course Descriptions Page, 2011).

Figure 1: Winthrop University, Interior Design Degree Checklist.
Source: Winthrop University Website, Department of Design Page, 2011.

The second year interior design courses at Winthrop University consist of Spatial Analysis and Theory II; Presentation Techniques II; Textiles and Materials; Interior
Design and Architectural History I and II; CAD for Interior Design; Lighting Design; and Interior Design Studio I (Winthrop University, Interior Design Degree Checklist Page, 2011). Spatial Analysis and Theory II and Presentation Techniques II are a continuation from the first year. The focus in Spatial Analysis and Theory II is on small to large-scale interior public spaces, environments, and other non-residential building types. In Presentation Techniques II, advanced black and white and color rendering techniques are presented and limited application of computer rendering is addressed (Winthrop University, Interior Design Course Descriptions Page, 2011). Textiles and Materials studies soft- and hard-surface interior building materials and their properties and applications (Winthrop University, Interior Design Course Descriptions Page, 2011).

Interior Design and Architectural History I and II explores history of interior design and architecture from antiquity to the Modern period; while CAD for Interior Design uses computer-aided two- and three-dimensional drafting design software to develop technical and presentation drawings (Winthrop University, Interior Design Course Descriptions Page, 2011). Lighting Design studies natural and artificial lighting fundamentals and the effect of interior lighting on intended occupants (Winthrop University, Interior Design Course Descriptions Page, 2011). Interior Design Studio I is a residential course focusing on space planning and application of concepts learned in other courses (Winthrop University, Interior Design Course Descriptions Page, 2011).

University of North Carolina at Greensboro
The University of North Carolina at Greensboro (UNCG) located in Greensboro, North Carolina, awards the Bachelor of Science in Interior Architecture and is CIDA accredited (UNCG, IAR Admissions Page, 2011). The program offers interior architecture foundation curriculum (Figure 2: University of North Carolina at Greensboro, Interior Architecture Courses.) consisting of Basic Environmental Design I and II studio courses, Design Visualization I and II courses, and History and Theory of Design I course, in the first year (UNCG, IAR Admissions Page, 2011). The Basic Environmental Design I and II studio courses investigate space design and explore basic materials while developing conceptual thinking (UNCG, IAR Courses Page, 2011).

The Design Visualization I and II courses address basic drawing processes to develop perceptual awareness, visual communication, analytical skills, “compositional principles, color theory, application, technical drawing and techniques, and industry standards” (UNCG, IAR Courses Page, 2011). The History and Theory of Design I course is a “survey of design forms evolved in response to humankind’s needs for community, architecture, furnishings, and artifacts, with development from prehistoric to modern eras in cultural, political, and technological contexts” (UNCG, IAR Courses Page, 2011).

The second year interior architecture courses at UNCG consist of more advanced levels. Basic Environmental Design III and IV; History and Theory of Design II; while adding Visual Communication I and II; and Materials, Methods, and Technologies of Interior Architecture I (UNCG, IAR Courses Page, 2011). Basic Environmental Design III and IV include spatial investigation and emphasize ‘cognitive understanding of design
process, light and color, construction systems, and ongoing study of materials” (UNCG, IAR Courses Page, 2011).

Figure 2: University of North Carolina at Greensboro, Interior Architecture Courses.
Visual Communication I and II addresses “two- and three-dimensional visual studies as related to conceptual and definitive aspects of the design process. Exercises aimed at developing a mastery of both technical and non-technical methods of visual communication” (UNCG, IAR Courses Page, 2011). History and Theory of Design II continues where the first course left off while Materials, Methods, and Technologies of Interior Architecture I studies “building materials, structural elements, environmental controls, mechanical systems and other components of interior architecture. Emphasis placed on historical precedents and contemporary applications” (UNCG, IAR Courses Page, 2011).

**Research in Design Education**

According to Dickinson et al, (2007) “the first exposure to interior design research should occur at the undergraduate level” (p. 2). Students need to understand that “as data is collected designers and design students become researchers” (Nussbaumer, 2009, p. 40). “Even when designers and design students use research data from various sources that may seem like fact-finding, they are researching information to apply to their projects and thus have taken on the role of researcher” (Nussbaumer, 2009, p. 40). “Research must be infused into the undergraduate experience so that these future practitioners can understand that design is not only an art, but is also a science that can utilize empirical evidence” (Dickenson et al, 2009, p. 12).

The use of research in design education already exists as interior design students are taught the design process in design fundamental courses as prescribed by CIDA (CIDA
Professional Standards, 2011). Whether they realize it or not “the student functions as a design researcher while learning about design, in addition to how to design” (Oxman, 2004, p. 64). “One of the inherent problems in design education is the difficulty to define requisite knowledge, that is, the residue of knowledge that should result from the design teaching process itself” (Oxman, 2004, p. 65). “Students perceive design concepts in terms of a specific learning experience (a studio) rather than recognize the continuum of knowledge that design education facilitates’ (Carmel-Gilfoilen, 2006, p. 93).

Similar to the design process, research or evidence-based design is a process. “Undergraduate students who are exposed to the true research process-of defining a problem, collecting data, and analyzing findings-gain a better respect for empiricism. Inversely, students who are not exposed to the research process become the next generation of practicing professionals who are unable to substantiate design decisions based on scholarly research” (Dickinson et al, 2007, p. 2; Gibson, 1994).

Teaching Evidence-Based Design to Beginning Design Students

“There is a new emphasis in higher education on instilling portable skills such as creativity, critical thinking, and connectivity across disciplines” (Ankerson & Pable, 2008, p. 8). “A primary lesson of a beginning design studio is the development of fundamental design competence. This entails acquiring skills of integration, projections, exploration, as well as critical thinking-forming the basis of thinking ‘like a designer’” (Chastain & Elliott, 2000, p. 83). A gap exists between what we know and what we can
articulate (Bermudez, 2005). Beginning design students need “to build greater connectedness between their actions and thoughts” (Temple & Masden, 2003, p. 112).

Some interior design educators may believe to introduce evidence-based design at the foundation level appears to be the addition of one more concept that will overwhelm already struggling students. Beginning design students seem to struggle transitioning from foundation to discipline–specific studios (Carmel-Gilfilen, 2006). “Some students have been observed to be overwhelmed with the amount of content knowledge required and the demand for creativity” (Carmel-Gilfilen, 2006, p. 93). The beginning design student faces the additional difficulty of learning this multitude of new concepts as they adapt to college life and the unique characteristics of design study.

Introducing evidence-based design to the beginning design student allows students to begin developing critical thinking skills early while at the same time learning the design process. Introducing evidence-based design at the foundation level allows the students to learn concurrently with the design process instead of consecutively. Laying this foundation early in design education provides opportunity to build upon this information and cultivate students with solid portable skills and provides a method for students to articulate knowledge learned to clients.

Curriculum changes are needed as the fields of architecture and interior design move in the direction of increased accountability and rigor being involved in the design process which leads to research playing a larger role (Hamilton & Watkins, 2009). “It is the
development of thinking skills that is critical in design education-quality of knowledge versus where to find it” (Oxman, 2004, p. 65).

The only thing certain in interior design, teaching and in life is change. “All craftsmen must adjust and readjust their actions in line with hoped-for outcomes” (Lortie, 2002, p. 135). Teaching, like interior design and life, is made up of constant readjustments to navigate the constant state of transition. Getting students in the habit of the process of evidence-based design research at the beginning design level and continuing to develop and refine these skills throughout undergraduate studies will better prepare students entering graduate school or the professional workforce.

Summary of the Literature

In summary, the salient points from the review of the literature are as follows.

1. Evidence-based design continues to become more significant in the interior design profession as it is applied to multiple building types, not just healthcare design.
2. Teaching evidence-based design in interior design education is necessary to prepare students for working in the profession.
3. Introducing evidence-based design to the beginning design student allows students to be exposed to evidence-based design and develop good research habits from the beginning of their education.
4. Steps of evidence-based design can be easily incorporated into the steps of the Design Process; and, into the study of human factors, ergonomics, anthropometrics, and Proxemics.
5. Even though beginning design students are typically overwhelmed with the amount of material they are expected to learn, including evidence-based design early in the learning process may help students to acclimate to the information and develop better research skills as they progress in their education.
Significance of the Study

Researchers have examined teaching, evidence-based design, and beginning design education separately, but rarely have they been studied in relation to each other. Although it emerges slowly, some research on introducing research to interior design students at the undergraduate level is available. Yet, little information exists on how interior design educators view incorporating evidence-based design into curricula at the entry-level of undergraduate studies for the beginning design student. This research explores design educators’ perceptions about teaching evidence-based design to beginning design students to begin development of critical thinking skills early in design education, and explains the reasoning behind these perceptions.

A quantitative study is needed where educators surveyed are characterized by differences and similarities in occupation, gender, teaching background, geographic location, academic home, institution type, design program, and teaching experience, to identify what trends might exist in faculty perceptions about teaching evidence-based design to beginning design students. A qualitative study that describes and interprets these differences and similarities is needed. Qualitative inquiry offers the opportunity to better understand how educators’ perceptions relate to or influence teaching evidence-based design to beginning design students.

A better understanding about how educators view evidence-based design in regard to teaching beginning design students is necessary due to the importance of evidence-based design to the future of the profession. Explaining these perceptions provides valuable
insight toward understanding how to improve alignment of beginning design education with the design profession. In addition, this information provides interior design educators, administrators, environmental psychologists, consultants, architects, and interior designers information to maximize the benefits of evidence-based design; understand the specific needs of the beginning design student regarding evidence-based design; and the ability to meet the needs of students, educators, interior designers, design firms, and clients more efficiently through understanding and application of credible research. A qualitative study on how educators’ knowledge about and experiences with using evidence-based design, as well as understanding how educators incorporate evidence-based design in the beginning design courses, or if they incorporate it at all, can illuminate conceptual understanding about design.

The integrative analysis of quantitative and qualitative data, where the quantitative results discuss categorical data and trends, provides framework for qualitative analysis. The qualitative results expose a detailed account with actual responses, providing greater insight about educators’ perceptions and more reliable results. The analysis is of the quantitative and qualitative data is combined in the research methods and results sections.

Chapter III. Research methods
The present study uses both quantitative and qualitative methods to explore and explain faculty perceptions about teaching evidence-based design to the beginning design student to start development critical thinking skills early in design education. The following research questions were asked: What are educators’ perceptions about teaching
evidence-based design to the beginning design student? Do educators believe evidence-based design should be introduced to the beginning design student? What is the extent of educators’ knowledge about evidence-based design? Do educators currently teach evidence-based design to beginning design students? How do educators incorporate evidence-based design into the classroom? Do educators plan to teach evidence-based design to their students in the future? What outcomes do educators see regarding teaching evidence-based design to beginning design students? What are educators’ predictions about the future success of teaching evidence-based design to beginning design students?

**Study Definition of Evidence-Based Design**

As previously stated in the literature review on page 13, for purposes of this study, the definition of evidence-based design includes human factors, ergonomics, anthropometrics, Proxemics, sustainability, the Design Process, Wayfinding, and Universal Design as components of the definitions provided by Hamilton and Watkins (2009); and Nussbaumer (2009).

**Study Definition of Beginning Design Students**

As previously stated in the literature review on page 31, for purposes of this research, the beginning design student will be defined as first and second year students enrolled in a Council for Interior Design Accreditation (CIDA) accredited design program.

**Implications of Research**
This study will assist with development of future studies and practical strategies for teaching evidence-based design to beginning design students, as well as upper-level design students. As curriculum and accreditation standards revisions must occur periodically to meet the ever-changing requirements of the design profession, the results from this study and future studies may influence those changes. Understanding if educators’ perceptions about teaching evidence-based design to beginning design students are related to their own knowledge and experience or lack of knowledge and experience with evidence-based design would have major implications for design education and the design profession.

**Hypotheses**

1. If design educators teach evidence-based design to beginning design students, then they incorporate it with the design process.

2. If design educators do not understand or are not aware of the previously stated definition of evidence-based design in relation to the design profession or design education then they will not introduce evidence-based design to beginning design students.

3. If design educators utilize sources about evidence-based design from other design educators, then design educators influence design educators about teaching evidence-based design.

4. If educators teach evidence-based design to beginning design students, then the main purpose is to cultivate critical thinking skills early in design education.
Approach Method

After a review of the literature, available resources, and potential participants, an anonymous survey questionnaire was determined as the best method for gathering educators’ perceptions. An anonymous questionnaire provided educators the ability to be candid with their responses, therefore supplying more reliable data. Additionally, the questionnaire served as an appropriate instrument for gathering quantitative and qualitative data.

Survey Instrument

The survey questionnaire was designed to gather participant responses on attitudes, beliefs, opinions, and practices. The mixed methods survey questionnaire consisted of a combination of close-ended, open-ended, and semi-closed-ended questions. Questions were constructed from multiple survey question examples and customized specifically for this study. The final version for the National Conference on the Beginning Design Student 2011 attendees contained 39 questions divided into 4 sections: general organization, demographic information, future projections about teaching evidence-based design to beginning design students, and, final comments. The final version for the Interior Design Educators Council participants contained 38 questions divided into the same 4 sections. Question number 31 was omitted from the Interior Design Educators Council survey due to a software error. Otherwise, the questionnaires were identical.

Data Collection Process
The Institutional Review Board (IRB) at the University of Nebraska-Lincoln (UNL) was consulted for permission to conduct this research. A requirement to take and pass Human Participants (CITI) training was fulfilled.

The Nebraska Evaluation and Research (NEAR) center was consulted on the best way to distribute the survey electronically. This resulted in a referral to the Survey, Statistics, and Psychometrics (SSP) Core Facility at UNL, who suggested using the Qualtrics software and granted use of the UNL license to access the survey software.

Permission to distribute the paper survey at the National Conference on the Beginning Design Student 2011 that took place in April, 2011, on the campus of UNL in the College of Architecture, was secured through the College of Architecture. Permission to distribute the electronic survey via email to the distribution list of the Interior Design Educators Council was secured through the IDEC Membership department. The email invitation, final survey questionnaire, and research protocol was submitted to the IRB along with Informed Consent forms. After minor revisions, the research was approved by the IRB with an “Exempt” status.

**Participants**

The sample for the National Conference on the Beginning Design Student 2011 study consisted of conference attendees. These educators were selected because of the likelihood that their attendance at a National Conference on the Beginning Design Student 2011 reflected a specialization in teaching beginning design students or an
interest in this area. The study took place on the campus of UNL, in the College of Architecture. The school served as the 2011 conference host. A paper questionnaire (Appendix A) with an invitation to participants was distributed to conference attendees during check-in on the first day with instructions to return the questionnaires to a secure check point. A thank you was included with the paper questionnaire.

The sample for the Interior Design Educators Council study consisted of the members of this organization. These educators were selected because of the likelihood that they would represent the best cross-section of design educators. The survey was distributed electronically (Appendix B) through email to the group email distribution list, including an invitation to participate email. A follow-up reminder email was sent later. A thank you was included in both the invitation email and the follow-up email.

**Response Rate**

For the National Conference on the Beginning Design Student 2011 study, 51 paper surveys were distributed and 15 surveys were returned, giving a response rate of 29%. For the Interior Design Educators Council study, surveys were emailed to a distribution list with 561 email addresses and 62 of those recipients responded, giving a response rate of slightly over 11%.

**Consent**

Consent was determined to be implied if either a paper survey or electronic survey was completed and returned.
Chapter IV. Results Analysis

Survey data from both the National Conference on the Beginning Design Student 2011 (NCBDS 2011) Study and the Interior Design Educators Council (IDEC) Study were first organized by category and then summarized; then survey data from corresponding questions in each survey was analyzed separately and together. The analysis of survey results is presented here in this manner. The corresponding questions from both surveys are analyzed together for comparison. Quantitative and qualitative data are interpreted together in a triangulation analysis process to determine complementary, converging, and, inconsistent results. Statistical data was meaningful for only certain questions.

Survey Results Analysis

The survey questions were grouped into the following categories for analysis purposes because they best represent the concept behind the questions: educator demographics, design program information, evidence-based design, beginning design, teaching evidence-based design to beginning design students, future projections about teaching evidence-based design to beginning design students, omitted questions, and final comments.

Educator Demographics

**Question 25**-What is your occupation? (Please select your primary job function.)

Table 3: NCBDS 2011 Study Question 25-Educator Occupation
In the NCBDS 2011 study (Table 3), Assistant Professors made up the majority or 53% of the respondents while in the IDEC study (Table 4), Professors made up the majority or 27% of the respondents along with “Associate Professors” who also made up 27%. Of the “Other” respondents, 33% of the NCBDS 2011 study included respondents who are
“professor/Chair”; and, 40% of the IDEC study included respondents who are “Program Coordinator”.

**Question 18**—How long have you been teaching beginning design students?

![Figure 3: NCBDS 2011 Study Question 18-Time Teaching Beginning Design Students](image)

The majority of respondents from the NCBDS 2011 study (Figure 5: NCBDS 2011 Study Question 1-Type of Design Program) have been teaching beginning design students for “2-5 years” followed by an equal number of responses for “0-2 years”; “5-10 years”; and, “10-15 years”. In the IDEC study (Figure 4), the majority of respondents have been
teaching beginning design students for “20-25 years” followed by “5-10 years”. Both groups had a significant number of educators who have taught beginning design students in the “5-10 year” range.

**Question 26**-Please indicate your gender.

NCBDS 2011 Study: 53% of respondents indicated they are female.

IDEC Study: 80% of respondents indicated they are female.

**Design Program Information**

**Question 1**- In which type of design program do you teach?

![Figure 5: NCBDS 2011 Study Question 1-Type of Design Program](image-url)
In the NCBDS 2011 study (Figure 5), respondents teaching in an architecture program make up 47%, while 7% teach in interior design programs. IDEC study (Figure 6) respondents teaching in an interior design program make up 88%, while 11% teach in interior architecture programs. There were no respondents teaching in the field of architecture in the IDEC study.

**Question 2** - In which academic home is your design program located in?

**Table 5: NCBDS 2011 Study Question 2-Academic Home**

<table>
<thead>
<tr>
<th>NCBDS 2011 Study (2):</th>
<th>Academic Home</th>
<th>%</th>
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<tbody>
<tr>
<td>Architecture</td>
<td></td>
<td>60%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>
The majority, or 60%, of respondents in the NCBDS 2011 study (Table 5: NCBDS 2011 Study Question 2-Academic Home) indicated that architecture is the academic home where their program is located. 28% of respondents in the IDEC study (Table 6) indicated that Human Sciences is the academic home where their program is located; and, the majority, or 49%, of respondents fell under the category of “Other”. Of those in the “Other” category, “Interior Design” made up slightly under 18%; “School of Design” and “College of Arts & Sciences” each almost 11%; and, “Business” and “College of Design” each slightly over 7%.

**Question 3** - What type of higher education organization do you work at?

<table>
<thead>
<tr>
<th>NCBDS 2011 Study (3):</th>
<th>Type of Higher Education Organization</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public comprehensive institution</td>
<td></td>
<td>43%</td>
</tr>
<tr>
<td>Public 4 year college</td>
<td></td>
<td>29%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>14%</td>
</tr>
<tr>
<td>Private comprehensive institution</td>
<td></td>
<td>14%</td>
</tr>
</tbody>
</table>
In the NCBDS 2011 study (Table 7), approximately 43% of respondents teach at a public comprehensive institution; with 29% teaching at a public 4 year college. 33% of respondents in the IDEC study (Table 8) teach at a public 4 year college; 26% at a public comprehensive institution. A closer review of these percentages shows that the NCBDS 2011 study revealed that those respondents teaching in comprehensive institutions, public or private, when combined had the majority, or 57%, of total responses. The IDEC study revealed that those respondents teaching in a 4-year college, public or private, when combined had the majority, or 56%, of total responses.

**Question 4**—Which of the following best describes the manner in which the interior design program at your school is developed?
Table 9: NCBDS 2011 Study Question 4-Program Development

<table>
<thead>
<tr>
<th>NCBDS 2011 Study (4):</th>
<th>Program Development</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on accredited guidelines (CIDA, NAAB, NASAD, etc.)</td>
<td></td>
<td>57%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>29%</td>
</tr>
<tr>
<td>Panel or Board</td>
<td></td>
<td>14%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 10: IDEC Study Question 4-Program Development

<table>
<thead>
<tr>
<th>IDEC Study (4):</th>
<th>Program Development</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on accredited guidelines (CIDA, NAAB, NASAD, etc.)</td>
<td></td>
<td>84%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>14%</td>
</tr>
<tr>
<td>Panel or Board</td>
<td></td>
<td>2%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

The majority, 64%, of NCBDS 2011 study (Table 9) respondents stated that their program is “based on accredited guidelines (CIDA, NAAB, NASAD, etc.)”. In the IDEC study (Table 10), a majority, 84%, of respondents stated that their program is “based on accredited guidelines (CIDA, NAAB, NASAD, etc.)”. There was some overlap as another 14% of IDEC study respondents fell into the “Other” category, with the first major theme of CIDA being cited most in combination with other factors as opposed to being the sole basis for development. Faculty was the second major theme, being cited almost as much as CIDA as being a major theme in interior design program development. Secondary themes included future needs of the profession; and, “all of the above” indicating a combination of CIDA, NAAB, NASAD, etc.; Panel or Board; and,
Individual instructor. One notable response indicated that their school goes beyond CIDA and “seeks opinions of practitioners”.

**Question 7**—What are the qualifications of the teachers at your school? Check all that apply.

**Table 11: NCBDS 2011 Study Question 7-Educator Qualifications**

<table>
<thead>
<tr>
<th>NCBDS 2011 Study (7):</th>
<th>Educator Qualifications</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Architect</td>
<td></td>
<td>87%</td>
</tr>
<tr>
<td>Design Educator with Masters Degree</td>
<td></td>
<td>80%</td>
</tr>
<tr>
<td>Professional Interior Designer</td>
<td></td>
<td>53%</td>
</tr>
<tr>
<td>LEED</td>
<td></td>
<td>47%</td>
</tr>
<tr>
<td>Design Educator with Doctoral Degree</td>
<td></td>
<td>47%</td>
</tr>
<tr>
<td>NCIDQ</td>
<td></td>
<td>33%</td>
</tr>
<tr>
<td>Beginning Design Educator with Masters Degree</td>
<td></td>
<td>33%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>27%</td>
</tr>
<tr>
<td>Beginning Design Educator with Doctoral Degree</td>
<td></td>
<td>7%</td>
</tr>
</tbody>
</table>
“Professional Architect” made up 87% of the responses regarding educator qualifications at the respondents’ institutions in the NCBDS 2011 study (Table 11) followed by “Design Educator with Masters Degree” with 80%; and “Professional Interior Designer” with 53%. In the IDEC study, “Design Educator with Masters Degree” made up 92% of the responses; 83% “NCIDQ” certified; and, 69% “Professional Interior Designer”.

“LEED” certification had more responses among the IDEC study (Table 12) respondents’ institutions than NCBDS 2011 study respondents’ institutions, though it is important to both. However, the NCBDS 2011 study responses for “LEED” certification were higher “NCIDQ”; and IDEC study responses show not only the opposite but NCIDQ had significantly more responses.

“Design Educator with Doctoral Degree” and “Beginning Design Educator with Masters Degree” both had slightly more responses in the IDEC study than the NCBDS 2011 study. Only 7% of respondents in the NCBDS 2011 study selected “Beginning Design Educators with Doctoral Degree”; and, 14% in the IDEC study. Of the “Other” respondents, no clear theme emerged in either study; however, “CID” had slightly more responses than others in the IDEC study.

**Question 27**-Where are you located (e.g. city, state/province, and country)?
NCBDS 2011 study (Figure 7) respondents from Pennsylvania made up roughly 20% of the respondents and slightly over 13% were from Canada and Texas. The rest of the states, Georgia, Indiana, Kansas, Maryland, Nebraska, Ohio, South Dakota, and Tennessee, each made up over 6% of the responses. To make this data more meaningful, states were grouped into regions defined by the United States Census Bureau, (Census Regions and Divisions of the United States Page, 2011). Based on the four regions being the Midwest, Northeast, South, and West, responses from the Midwest and the South...
each made up over 33% of respondents; the Northeast had almost 20%; and, Canada, or Other, had slightly over 13% of the respondents.

IDEC study (Figure 8) respondents from North Carolina made up roughly 19% of the responses. Georgia, Florida, and Minnesota each made up slightly over 7% of respondents. Of the remaining states; Alabama, Massachusetts, Michigan, Ohio, Tennessee, and Texas each made up almost 5% of the respondents. Arkansas, California, Illinois, Kansas, Kentucky, Louisiana, New York, Oklahoma, Oregon, Washington; and, Canada, each made up over 2% of the respondents. Like in the BDC study, states were grouped into regions defined by the United States Census Bureau, (Census Regions and Divisions of the United States Page, 2011). Based on the four regions being the Midwest, Northeast, South, and West, responses from the South made up over 57% of respondents. Canada and “USA” made up the “Other” category, each having slightly over 2% of the respondents.

**Question 29** - What type of degrees, programs, or credentials does your college, university, or organization currently offer through on-line learning (either in partnership with other organizations or by itself)? Check all that apply.
In the NCBDS 2011 study (Figure 9), 75% of respondents indicated that “Master’s Degrees (other than MBA)” are offered through on-line learning at their college, university, or organization. “Undergraduate degrees” made up 42%. Of the “Other” responses, the majority almost two-thirds did not know and one-third indicated none. The IDEC study (Figure 10) showed 59% of respondents indicating that “Undergraduate degrees” are offered through on-line learning at their college, university, or organization.
Of the “Other” responses, no clear theme emerged, however, “None”; “Not sure”; and “courses” each had 20% of responses.

**Evidence-Based Design**

**Question 11** - Describe your knowledge about Evidence-Based Design. Hamilton and Watkins (2009) define evidence-based design (EBD) as “a process for the conscientious, explicit, and judicious use of current best evidence from research and practice in making critical decisions, together with an informed client, about the design of each individual and unique project” (p. 9).

![Figure 11: NCBDS 2011 Study Question 11-Educators' Descriptions of Their Knowledge of Evidence-Based Design](image-url)
The majority of NCBDS 2011 study (Figure 11) respondents selected “Good; Advanced” (36%); with “Fair; Need to gain more knowledge” (21%); and, “Poor; Do not know much at all” (21%). The majority of IDEC study (Figure 12) respondents selected “Good; Advanced” (48%); with “Fair; Need to gain more knowledge” (29%). Many, or 42%, of respondents in the NCBDS 2011 study need to gain more knowledge or do not know much at all. In the IDEC study, 31% need to gain more knowledge or do not know much at all.

**Question 12**-Describe your experience with Evidence-Based Design.
The majority of respondents in both the NCBDS 2011 study (Figure 13) and the IDEC study (Figure 14) showed their experience with evidence-based design as some.

**Question 14** - Do you or your program currently teach evidence-based design to beginning design students?

NCBDS 2011 Study: 75% of respondents responded no.
IDEC Study: 54% of respondents responded no.

**Question 14a**-If yes, how do you incorporate teaching evidence-based design into our beginning design classroom? Check all that apply.

<table>
<thead>
<tr>
<th>NCBDS 2011 Study (14a):</th>
<th>How Educators Incorporate Teaching EBD into the Beginning Design Classroom</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporated with the Design Process</td>
<td></td>
<td>88%</td>
</tr>
<tr>
<td>Incorporated with Elements and Principles of Design</td>
<td></td>
<td>38%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>13%</td>
</tr>
<tr>
<td>Independent of other material as an individual topic</td>
<td></td>
<td>13%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IDEC Study (14a):</th>
<th>How Educators Incorporate Teaching EBD into the Beginning Design Classroom</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporated with the Design Process</td>
<td></td>
<td>79%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>21%</td>
</tr>
<tr>
<td>Incorporated with Elements and Principles of Design</td>
<td></td>
<td>21%</td>
</tr>
<tr>
<td>Independent of other material as an individual topic</td>
<td></td>
<td>14%</td>
</tr>
</tbody>
</table>

An overwhelming majority of responses in both studies (Table 13 and Table 14) indicated evidence-based design is incorporated with the design process. “Other” responses in both studies revealed no clear theme.
**Question 14b**-If no, do you plan to teach evidence-based design to your students in the future?

NCBDS 2011 Study: 50% of respondents indicated no.

IDEC Study: 61% of respondents indicated no.

**Question 14c**-Why or Why not?

Respondents in the NCBDS 2011 study indicated various responses in the blank space provided. A primary theme that emerged from the data was to introduce in the second or sophomore year and include heavily in junior and senior year (upper level). Although responses included data such as, “good framework for a student to develop a design process”, 75% of responses indicated that evidence-based design should be incorporated at the sophomore, junior and senior education level.

Respondents in the IDEC study indicated various responses in the blank space provided. A primary theme that emerged from the data was to introduce in the junior and senior year (upper level). Although responses included data such as, “not sure of plans for future”; and, “too much information”, slightly over 27% of responses indicated that evidence-based design should be incorporated at the junior and senior education level.

**Question 19**-Have you attended any training sessions or workshops on evidence-based design?

NCBDS 2011 Study: 87% respondents indicated no.

IDEC Study: 75% respondents indicated no.
**Question 20**—Do you plan to attend any training sessions or workshops on evidence-based design?

NCBDS 2011 Study: 100% of respondents indicated no.

IDEC Study: 67% of respondents indicated no.

**Question 21**—From which of the following sources do you get evidence-based design learning ideas? Check all that apply.

![Bar Chart: NCBDS 2011 Study Question 21-Evidence-Based Design Sources Used by Educators](chart.png)

Figure 15: NCBDS 2011 Study Question 21-Evidence-Based Design Sources Used by Educators
“Colleagues” had 90% of the responses; and, “Teaching Publications” had 50% of responses in the NCBDS 2011 study (Figure 15). No clear theme was revealed in the “Other” responses. In the IDEC study (Figure 16), “Teaching Publications” had 63% of the responses; followed by “Colleagues” with 42%. Of the “Other” responses, the major theme was “personal research”. A secondary theme was “all of the above”.

**Question 22** Please tell us any additional or general comments and/or opinions you may have about evidence-based design.

NCBDS 2011 Study: One respondent commented, “(For #21: Education; masters thesis”, which provided no significant data.

IDEC study respondents indicated various responses in the blank space provided. No major theme that emerged from the data. However, several minor themes indicated that evidence-based design is incorporated in courses from sophomore year and beyond;
evidence-based design is the basis for all design and the most important approach to the study of design; and, evidence-based design is imperative for the advancement of the profession. One response noted was, “The addition of practitioners to the faculty helped us to understand the importance of evidence based design.”

**Beginning Design**

**Question 5**-Where is “Foundation Design”; “Core Courses”; or “Beginning Design” placed in your school’s interior design program?

**Table 15: NCBDS 2011 Study Question 5-Location of Foundation, Core, or Beginning Design Courses in Educators' Program**

<table>
<thead>
<tr>
<th>NCBDS 2011 Study (5):</th>
<th>Location of Foundation, Core, or Beginning Design Courses in Program</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td></td>
<td>31%</td>
</tr>
<tr>
<td>Area of specialization determined from the start</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Orientation toward specialization at the end of preliminary study</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Prerequisite: Prior to admission to upper level courses</td>
<td></td>
<td>23%</td>
</tr>
</tbody>
</table>
Table 16: IDEC Study Question 5-Location of Foundation, Core, or Beginning Design Courses in Educators’ Program

<table>
<thead>
<tr>
<th>IDEC Study (5):</th>
<th>Location of Foundation, Core, or Beginning Design Courses in Program</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite: Prior to admission to upper level courses</td>
<td></td>
<td>63%</td>
</tr>
<tr>
<td>Area of specialization determined from the start</td>
<td></td>
<td>26%</td>
</tr>
<tr>
<td>Orientation toward specialization at the end of preliminary study</td>
<td></td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>4%</td>
</tr>
</tbody>
</table>

Over two-thirds (69%) of NCBDS 2011 study (Table 15) responses were equally distributed over three categories, “Prerequisite: Prior to admission to upper level courses”; “Orientation toward specialization at the end of preliminary study”; and “Area of specialization determined from the start”. The “Other” category had 31% of the responses with 50% of those being “N/A” or “not applicable”. For the IDEC study (Table 16), “Prerequisite: Prior to admission to upper level courses” had 63% of responses. “Area of specialization determined from the start” had responses of 26%.

**Question 6** - What is the duration of the “Foundation Design”, “Core”, or “Beginning Design” courses in your school’s program?
“First year or freshmen” received the majority (71%) of the responses in the NCBDS 2011 study (Table 17); and, the majority of responses (44%) of the responses in the IDEC study (Table 18). Note that of the “Other” responses in the IDEC study, 60% responded with approximately the “middle of sophomore year”.

**Question 8**-What are the objectives of the Basic or Foundation Design courses at your school? Check all that apply.
“Elements of Design” and “Principles of Design” each received an overwhelming 100% of responses in the NCBDS 2011 study (Figure 17) as being objectives in Basic or Foundation Design courses, while “Studio Methods” and “Spatial Analysis” each received a significant number of responses at 80%. “Other” accounted for 27% of
responses which was made up of “Critical Thinking”; “hand skills”; “tectonic and spatial
devel.”; and, “and more” each having 25% of responses. No major theme emerged.

In the IDEC study (Figure 18), “Principles of Design” received 86% of responses with
“Elements of Design” received 84%, both representing a significant number of responses
as being objectives in Basic or Foundation Design courses. “Spatial Analysis” had 72%;
and “Other” accounted for 19% of responses which was made up of “all of the above”
and “theory” sharing equally as minor themes with each receiving slightly over 36% of
those responses for a total of 72% of that category.

**Question 9**-Do you incorporate guest speakers in your beginning design courses?

NCBDS 2011 Study: 60% of respondents indicated “yes”.

IDEC Study: 69% of respondents indicated “yes”.

**Question 9a**-If so, what are their professions? Check all that apply.
In the NCBDS 2011 study (Figure 19) respondents showed an overwhelming majority (90%) of professions of guest speakers incorporated in their beginning design courses are “Architects”. Of the responses in the “Other” category, no major theme emerged but “varied fields”; “interior architect; landscape architect; planner; product designers”; and “planners, urban designers, landscape arch.”, all were minor themes.
IDEC study (Figure 20) respondents showed the majority (73%) of professions of guest speakers incorporated in their beginning design courses are “Interior Designer”. Of the “Other” category, no major theme emerged. Varied fields, builder or construction related, and “all of the above” were minor themes.

**Question 9b** - If so, what topics do you typically have them speak on? Check all that apply.

![Figure 21: NCBDS 2011 Study Question 9b-Topics of Guest Speakers in Beginning Design Courses](image-url)
In the NCBDS 2011 study (Figure 21), “Collaboration” had 56% of the responses; followed by “Color/Lighting”, “Sustainability”, and “Other” each with 44% of responses. Of the “Other” responses, “BROAD”; “Application of Design; Principles of their own work”; and, “design, the urban form, nature, land form”, each consist of roughly 33% of responses. “Technology”; “Textiles”; “Aging in Place”; and, “Business Strategies” each had 11% of responses.

In the IDEC study (Figure 22), “Finishes/Furnishings” had 46% of responses; “Color/Lighting” and “Sustainability” each had 43%; “Textiles” 26%; “Technology” 31%; “Collaboration” 23%; “Business Strategies” 17%; “Aging in Place” 11%; “Fine Art” 9%; and “Other” with 40%. Of the “Other” category, varies with project or semester and the profession as a whole both emerged as themes.
**Question 10**-Do you incorporate information about human factors and the study of ergonomics, anthropometrics, and Proxemics at the Basic Design or Foundation level?

NCBDS 2011 Study: 73% of respondents responded yes.

IDEC Study: 80% of respondents responded yes.

**Question 10a**-Why or Why not?

Respondents in the NCBDS 2011 study indicated various responses in the blank space provided. A major theme that emerged from the data was human factors and the study of ergonomics, anthropometrics, and Proxemics are addressed at the Basic Design or Foundation level as an introduction to human scale and scale/proportion. Although responses included data such as, “I do not know”; “other more basic priorities”; and, “This was introduced in Design Process”, almost 56% of responses indicated this is an introduction to human scale and scale/proportion as reason to incorporate human factors at the beginning design education level.

Respondents in the IDEC study indicated various responses in the blank space provided. Two major themes emerged from the data. The first theme was that human factors and the study of ergonomics, anthropometrics, and Proxemics are addressed at the Basic Design or Foundation level because they are considered to be basics of design criteria in order to understand and design spaces. The second theme was because they are essential to designing for human use of space and understanding design. Although responses included data such as, “covered as sophomores”; “CIDA”; and, “not enough time”,

almost 62% of responses indicated they incorporate human factors at the beginning
design education level because the information is basic and essential to design.

**Teaching Evidence-Based Design to Beginning Design Students**

**Question 13**- In your opinion, do you believe evidence-based design should be introduced
to the beginning design student?

NCBDS 2011 Study: 56% of respondents responded no.

IDEC Study: 63% of respondents responded yes.

**Question 13a**- Why or Why not?

Respondents in the NCBDS 2011 study indicated various responses in the blank space
provided. A primary theme that emerged from the data was there is too much
information to cover, and a secondary theme, maybe it could be mentioned as long as it is
simplified. Although responses included data such as, “do not know”; “Because it fosters
both a practical and critical-thinking approach necessary in the design professions”;
“responsibility to meet client need and explore avenues for client to expand idea of
need”; and, “to protect health, safety, & welfare”, 30% of responses indicated the amount
of information to cover as reason not to incorporate evidence-based design at the
beginning design education level, although 20% indicated maybe if it were mentioned or
simplified.

IDEC study respondents indicated various responses in the blank space provided. A
primary theme that emerged from the data was evidence-based design should be
introduced to the beginning design student because it is important as a research/design methodology. A secondary theme the emerged was that it is important for students to develop a habit of making informed decisions from the beginning. Another secondary theme was that is contrary to the other two is this information is covered at a later time. Although responses included data such as, “too complex a topic”; “too much information to cover”; and, “first year should introduced holistically and not in depth” or “overview”, almost 19% of responses indicated the importance as a research/design methodology; and almost 15% indicated to develop the habit of making informed design decisions as reason to incorporate evidence-based design at the beginning design education level, although another 15% indicated that the information being covered later as a reason not to introduce it at this level.

**Question 15**-If you answered yes to #14, what is your main purpose for introducing evidence-based design to the beginning design student?

NCBDS 2011 study respondents indicated various responses in the blank space provided. A primary theme that emerged from the data indicated to introduce analysis and critical thinking. Although responses included data such as, “to protect health, safety, & welfare”; and, “it is vitally important-old, new, and possible new directions in design be presented, discussed implemented and explored”, 50% of responses indicated their main purpose for introducing evidence-based design to the beginning design student relates to analysis and critical thinking.
IDEC study respondents indicated various responses in the blank space provided. A primary theme that emerged from the data indicated to develop good research habits early so students have the benefit of this ability throughout their course work. Although responses included data such as, “all designs depend on evidence”; and, “because it produces the best results”, over 58% of responses indicated their main purpose for introducing evidence-based design to the beginning design student relates to developing good research habits early.

**Question 16**- At what level do you think evidence-based design should be introduced to design students? Check all that apply.

![Bar Chart](Figure 23: NCBDS 2011 Study Question 16-Educators’ Opinions About What Level Evidence-Based Design Should be Introduced to Design Students)
In the NCBDS 2011 study (Figure 23), “Beginning Design, Basic Design, or Foundation Students” had the majority with slightly over 58% of responses; followed by “Advanced or Upper-level Design Students” with 50% of responses. In the IDEC study (Figure 24), “Advanced or Upper-level Design Students” had the majority with 48% of responses; followed by “Integrated throughout the duration of the design course studies” with 46% of responses.

**Question 17**-Please rank the following benefits of introducing evidence-based design to design students by importance with 1 being the least important and 5 being the most important.
In the NCBDS 2011 study (Figure 25), the majority of ranking for “Learning to conduct research” were tied with 27% as 1 and 27% as 2 on a Likert scale with 1 being the least
important and 5 being the most important in terms of benefits of introducing evidence-based design to beginning design students. In the IDEC study (Figure 26), the majority (35%) of respondents ranked the same category as 5.

The majority (45%) of NCBDS 2011 (Figure 25) study respondents ranked “Learning to locate credible sources” as 2; while the majority (39%) of IDEC study (Figure 26) respondents ranked the same category as 5; and, 35% as 4.

The majority (45%) of NCBDS 2011 study (Figure 25) respondents ranked “Improving design solutions” as a 5; and, the majority (47%) of IDEC study (Figure 26) respondents ranked the same category as 5.

The majority (40%) of NCBDS 2011 study (Figure 25) respondents ranked “Stronger collaboration skills as a 5; the majority of responses (29%) of IDEC study (Figure 26) respondents ranked this category as 4.

In the NCBDS 2011 study (Figure 25) majority rankings for “Improved client and user outcomes” were tied with 30% of responses as 4 and 30% as 5; the majority (45%) of responses of IDEC study (Figure 26) respondents ranked this category as 5.

**Question 24** What do you think the outcome of introducing evidence-based design to beginning design students might be?
NCBDS 2011 study respondents indicated various responses in the blank space provided. No clear theme emerged from the data. Although responses of interest included data such as, “Fosters both a practical and critical-thinking approach necessary in the design professions”; “accountability, utility, responsiveness, to/within design constituencies-student to recognize/confront an ‘other’ that must be satisfied outside of self”; “This depends on the way the content is delivered”; “too much-needs to get down to the basics again”; and “Stifles creativity & learning how to explore/create/imagine.”

IDEC study respondents indicated various responses in the blank space provided. The major theme that emerged from the data was that introducing evidence-based design to beginning design students would give students a better understanding and appreciation for credible research. One minor theme revealed was if evidence-based design is introduced in the freshman/sophomore years, it can be applied in the junior/senior years.

**Future Projections about Teaching Evidence-Based Design to Beginning Design Students**

**Question 30**—During the next few years, which factors will most significantly affect the success of introducing evidence-based design to beginning design students at your institution?

NCBDS 2011 study respondents indicated various responses in the blank space provided. A primary theme that emerged from the data had to do with faculty, citing “Buy-in from faculty”; “Faculty make-up”; and, “leadership from senior faculty/admin”. Although responses included data such as, “application in real-world scenarios; its ability to
transition throughout the students’ studies”; “College ID is in”; and “unknown”, 60% of responses indicated that factors most significantly affecting the success of introducing evidence-based design to beginning design students at their institutions would be faculty related.

IDEC study respondents indicated various responses in the blank space provided. A primary theme that emerged from the data had to do with faculty, citing “Faculty teaching foundations”; “Need to get all instructors on board with the idea”; and, “Education of Faculty”. Two minor themes that emerged with over 11% of responses each were “CIDA standards” and “we already teach evidence-based design”. Although responses included data such as, “not a goal”; “accessibility to databases and indexes”; and “Evidence for building will become more important as the cost of living increases.”, over 22% of responses indicated that factors most significantly affecting the success of introducing evidence-based design to beginning design students at their institutions would be faculty related. One notable response to this question from the IDEC study indicated, “Education of faculty. Their generation did not learn design from objective criteria.”

**Omitted Questions**

**Question 23**- Please tell us any additional or general comments and/or opinions you may have about beginning design students.

This question produced no significant information in either study group, therefore it was omitted.
**Question 28** - What is the name of your college, university or organization? Remember:
Please only include information that you feel comfortable in providing.
This question produced information for the researcher to provide final results to any respondents who would like to receive them. Due to the private nature of this information, this question has been omitted.

**Question 31** - If you wanted to obtain a book, technical report, or whitepaper related to teaching evidence-based design and/or beginning design students in higher education during the next year, which topic or content area would you be most interested in? Check all that apply.

![Figure 27: NCBDS 2011 Study Question 31-Resource Topics of Interest](image)

In the NCBDS 2011 study (Figure 27), “Beginning design students” received 40% of responses; “Evidence-based design basics” and “Other”; each received 33% of responses. An error occurred in the electronic survey and respondents in the IDEC study were not asked this question resulting in no data, therefore this question was omitted. This
question may be used in future research as the data from the NCBDS 2011 Study was of interest.

**Final Comments**

**Question 32**-Feel free to list additional comments related to any of the items in this survey, especially regarding the future of evidence-based design, the beginning design students or both. Actual stories and future predictions are welcome.

NCBDS 2011 Study: Responses were “good luck” and “good research”. No significant data was found.

IDECC Study: Respondents indicated various responses in the blank space provided. No major theme that emerged from the data. Responses included data such as “Evidence-based design skills sometimes hinders creativity. Instructors need to balance evidence-based design procedures with creativity exercises in order to activate all cerebral functions and improve brain connectivity, which is fundamental in design thinking.”; “I think the design science movement and efforts to conflate design and science, art and evidence is a mask for a discomfort with the perception of people in our field as being creative or less rigorous.”; “If and when EBD is routinely taught as an integral part of the design process, and subsequently becomes SOP in design practice, it will bridge the gap between academic research and design practice.”; and, “Students need to back up with evidence why they are designing and how it fits their clients and the community.”
Although no significant data was found for this question in the NCBDS 2011 study, final comments varied in the IDEC study.

Chapter V. Survey Results Conclusions

The respondents in both studies were primarily female made up of Assistant Professors, Associate Professors, and Professors. However, females only slightly had the majority (53%) of respondents in the NCBDS 2011 study. The majority of NCBDS 2011 study educators have been teaching beginning design students for the relatively short time, “2-5 years”, while the IDEC study educators have been teaching beginning design students for a significantly longer time, “20-25 years”. Both groups had a significant number of educators who have taught beginning design students in the “5-10 year” range.

Very little overlap occurred in terms of program type and academic home. Most NCBDS 2011 study respondents teach in an Architecture Program; and in the academic home of Architecture. Most IDEC study respondents teach in various academic homes with the majority located in Human Science. The NCBDS 2011 study revealed that those respondents teaching in comprehensive institutions, public or private, when combined had the majority, or 57%, of total responses. The IDEC study revealed that those respondents teaching in a 4-year college, public or private, when combined had the majority, or 56%, of total responses. These results may suggest that educator perceptions may be influenced by the type of institution in which they teach depending on whether the institution’s focus is on teaching, research, or both.
The data indicates an overwhelming majority of respondents surveyed from both studies teach in programs that are based on accredited guidelines. Respondents from both studies indicated the most significant educator qualifications for their institutions overall include Professional Architect, Design Educator with Masters Degree, and NCIDQ. Upon closer analysis, the institutions where the respondents of both studies teach, an overwhelming majority of educator qualifications include “Design Educators with Masters Degrees”; along with “Professional Architect” at the NCBDS 2011 respondents’ schools; and, “NCIDQ” and “Professional Interior Designer” at the IDEC respondents’ schools.

It is interesting to note that “LEED” certification appears to be more significant among the IDEC study respondents’ institutions than NCBDS 2011 study respondents’ institutions, though it is important to both. However, the NCBDS 2011 study responses suggest that “LEED” certification is somewhat more significant than “NCIDQ”; and IDEC study responses suggest not only the opposite but that NCIDQ may be dramatically more significant.

“Design Educator with Doctoral Degree” and “Beginning Design Educator with Masters Degree” are both slightly more significant in the IDEC study than the NCBDS 2011 study. Only 7% of respondents in the NCBDS 2011 study selected “Beginning Design Educators with Doctoral Degree”; and, 14% in the IDEC study, suggesting this may be the least significant educator qualification at the survey respondents’ institutions.
Respondents from the South made up the majority with the Midwest second. In the NCBDS 2011 study, with the exception of there being no responses from the West, responses appear to be distributed over a relatively wider geographical area. However the Midwestern location of the NCBDS 2011 study may explain the large number of responses from that region. The IDEC study had overwhelming response in the South compared to the other regions. Why this occurred is not clear.

Most respondents’ institutions offer undergraduate degrees and/or master degrees (other than MBA) on-line. This data suggests that the institutions where these educators teach offer some form of on-line methodology for student to utilize to inform their work. At first glance this may not appear to have anything to do with evidence-based design nor the beginning design student. However, openness to relatively new education methodologies like on-line or distance learning may indicate openness to incorporating other changes in teaching methods which may include teaching evidence-based design to beginning design students.

While most educators in both studies indicate their knowledge about evidence-based design is good or advanced, perhaps the most interesting indication about this data is that even though many respondents from both studies describe their knowledge of evidence-based design as good or advanced, 42% of respondents in the NCBDS 2011 study need to gain more knowledge or do not know much at all. When combined, NCBDS 2011 respondents having a fair or poor understanding of evidence-based design have the majority of responses.
In the IDEC study, 31% need to gain more knowledge or do not know much at all. For both studies, this suggests that while a significant number of respondents in both studies have an advanced knowledge about evidence-based design, a significant number of respondents still have fair or poor knowledge about this subject. The majority in both studies describe their experience with evidence-based design as some, instead of substantial or limited.

The majority of respondents do not teach evidence-based design to beginning design students. Among those that do, the majority incorporate it with the design process, which is consistent with Nussbaumer’s (2009) theory that research for new evidence can be conducted throughout the design process. The author of this research agrees that evidence-based design aligns with the steps in the design process. Of those who do not, the majority of respondents in the IDEC study do not plan to teach evidence-based design to beginning design student. However, it is noteworthy that NCBDS 2011 study responses indicated that only 50% do not plan to teach evidence-based design to beginning design students.

The responses from both studies agree on a similar major theme that educators believe evidence-based design should be introduced to the junior and senior (upper level) student. Few responses from the NCBDS 2011 study such as, “good framework for a student to develop a design process”, or from the IDEC study such as, “too much information”, reveal contradictory beliefs; one offers a possible explanation about why educators plan
to teach evidence-based design to the beginning design student and the other possibly explaining why not. Even though most educators from both studies cited the reason for this as because it should be incorporated at the junior and senior level, with the NCBDS 2011 study including the sophomore level in this response, a specific explanation about why educators believe this was not clear.

An overwhelming majority of respondents in both studies have not attended any evidence-based design training sessions or workshops and do not plan to attend any. The sources used by these respondents to gather information about evidence-based design include colleagues, teaching publications, and personal research; suggesting that educators’ influence other educators regarding evidence-based design.

Under general comments about evidence-based design (Question 22), several minor themes from the IDEC study indicated that evidence-based design is incorporated in courses from sophomore year and beyond; evidence-based design is the basis for all design and the most important approach to the study of design; and, evidence-based design is imperative for the advancement of the profession. Particularly interesting and perhaps most significant was the response that “The addition of practitioners to the faculty helped us to understand the importance of evidence based design.” This response reveals the importance of the role of practitioners in design education.

In the majority of study respondents’ programs, Foundation, Core, or Beginning Design courses are likely to be a prerequisite before beginning design students are admitted to
upper level design studies. While approximately one quarter of responses in both studies selected “Both First an Second year”, the data indicated that the duration of Foundation, Core, or Beginning Design courses in most programs of the educators surveyed is during the first or freshmen year. “Other” responses in the IDEC study, 60% indicated approximately the “middle of sophomore year”.

Elements of Design and Principles of Design are both overwhelmingly significant as they each received a striking majority as objectives of basic or beginning design courses in both studies. A comparison of the responses in each study showed that responses are relatively similar in order with the exception of the converse categories of “Studio Methods” and “Follow Directions”; and, “Other” and “Technology”. Additionally, percentages of responses also appear to be somewhat relative. Remarkably, the percentage of responses for “Research Skills” in both studies was the same.

The majority of respondents for both studies incorporate guest speakers in their beginning design courses. The research shows the majority of NCBDS 2011 study educators primarily have architects as their guest speakers, while the majority of IDEC study educators have interior designers as theirs; indicating that educators tend to have guest speakers in their beginning design classrooms who are in the same profession as their corresponding program, or have similar backgrounds. An interesting observation about this data was the minor themes that resulted from responses in the “Other” category, showing a variety of guest speaker professions. A significant difference in the two studies resulted in the selection of “Vendors” and “Sales Representatives” in the NCBDS
2011 Study only received 10% of responses each; but in the IDEC Study, “Vendors” had 54% and “Sales Representatives” had 41%. It is not clear why these results are inconsistent as these speakers were considered to be less significant by the NCBDS 2011 study respondents.

Similarities among topics educators in both studies ask guest speakers to discuss include sustainability and color/light. However, the significance lies in the dramatic differences. Finishes/furnishings stood out as a significant difference as it had the majority of responses in the IDEC study but had zero responses in the NCBDS 2011 study. Collaboration and fine art also stood out as a difference with higher percentage of responses in the NCBDS 2011 study than the IDEC study.

A significant majority of respondents in both studies indicated they incorporate information about human factors and the study of ergonomics, anthropometrics, and Proxemics at the beginning design level. The major theme in the NCBDS 2011 study, that the educators surveyed use human factors and the study of ergonomics, anthropometrics, and Proxemics to introduce human scale and scale/proportion to beginning design students, dovetails into both major themes in the IDEC study, that human factors, ergonomics, anthropometrics, and Proxemics are considered to be basics of design criteria in order to understand and design spaces and that they are essential to designing for human use and understanding design. Somewhat contrary to these themes was a response in the NCBDS 2011 study indicating “other more basic priorities”.
When asked if they believe evidence-based design should be taught to beginning design students, the data from the two studies is clearly contradictory. The majority of NCBDS 2011 study respondents believe there is too much information to cover in evidence-based design, but if it is simplified it may be alright to mention it to beginning design students. The majority of IDEC study respondents believe evidence-based design is important as a research/design methodology; and, it is important for students to begin to develop the habit of making informed decisions from the beginning.

Both studies conveyed that of those who do introduce evidence-based design to beginning design students the main purpose is because evidence-based design requires analysis, critical thinking, and research habits. Of significant interest was one actual response in the IDEC study indicating that the respondent “could change my mind over time as it becomes more affirming of how it helps beginners”. This response suggests that educators might incorporate evidence-based design into beginning design courses if new research show benefits for their students.

Another response of interest was “This semester will be the first time I have taught freshmen in 8 years-thought it would be better for them to start learning this before they get to me as second semester juniors.” This response may suggest that this educator already sees benefits of learning evidence-based design at the beginning design level for upper level students (juniors).
When asked at what level they believe evidence-based design should be introduced to designs students, most NCBDS 2011 educators indicated the beginning design level; and, IDEC educators indicated the advanced or upper level. A fair number of responses from the NCBDS 2011 Study also indicated it should be introduced at the advanced or upper level. This is inconsistent with responses in both studies for question 13, where 56% of NCBDS 2011 respondents indicated they believe evidence-based design should not be introduced to the beginning design student; and, 63% of IDEC respondents indicated they believe evidence-based design should be introduced to the beginning design student.

In terms of benefits of introducing evidence-based design to beginning design students, NCBDS 2011 respondents ranked “Learning to conduct research” as least important; and, IDEC respondents ranked the same category as most important. NCBDS 2011 respondents ranked “Learning to locate credible sources” as 2, closer to least important; while IDEC respondents ranked the same category as most important. In this research, educators’ opinions on these benefits are relatively converse.

“Improving design solutions” ranked most important by both studies; where, the educators’ opinions are consistent.

“Stronger collaboration skills” ranked most important by NCBDS 2011 respondents and closer to most important by IDEC respondents. NCBDS 2011 respondents ranked “Improved client and user outcomes” close to most important and most important; and,
IDEC respondents ranked this category most important. The educators’ opinions for both benefits are somewhat consistent.

Responses of interest from the NCBDS 2011 study suggested these educators view possible outcomes of introducing evidence-based design as fostering critical-thinking; too much; and, stifles creativity, but no major theme emerged. The IDEC study educators indicated possible outcomes as giving students a better understanding and appreciation for credible research as a major theme. Another, minor theme exposed was if introduced in the freshman/sophomore years, evidence-based design can be applied in junior/senior years.

When asked about future projections about teaching evidence-based design to beginning design students, the most significant response referenced in both studies as the most important factor affecting the success of introducing evidence-based design to beginning design students at their institutions as being faculty related. Possibly the most interesting response to this question came from the IDEC study. The respondent indicated, “Education of faculty. Their generation did not learn design from objective criteria.”

When asked about general comments, responses IDEC respondents mentioned that evidence-based design: hinders creativity so a balance with creativity is required; masks discomfort with public perception of the profession; can close the gap between academic research and design practice once it becomes the norm; and, is needed by student to support their designs.
Hypotheses

1. If design educators teach evidence-based design to beginning design students, then they incorporate it with the design process.

TRUE: Respondents overwhelmingly identified how they incorporate evidence-based design in beginning design courses as with the design process.

2. If design educators do not understand or are not aware of the previously stated definition of evidence-based design in relation to the design profession or design education then they will not introduce evidence-based design to beginning design students.

TRUE: Design educators from both studies incorporate human factors, ergonomics, anthropometrics, and Proxemics, in beginning design courses, all of which are connected to evidence-based design, yet they do not teach evidence-based design to beginning design students. While mixed results regarding the educators’ knowledge about evidence-based design showed a significant number have good knowledge, but an even more significant number have fair or poor knowledge about the subject.

3. If design educators utilize sources about evidence-based design from other design educators, then design educators influence design educators about teaching evidence-based design.

TRUE: Sources cited by educators in both studies included colleagues and teaching publications.

4. If educators teach evidence-based design to beginning design students, then the main purpose is to cultivate critical thinking skills early in design education.
TRUE: Educators in both studies who do teach evidence-based design to beginning design students showed the main purpose for this is because evidence-based design requires analysis, critical thinking, and research habits. The IDEC study indicated this develops research habits early.

Chapter VI. Implications

The primary purpose for this research was to gain a better understanding about educators’ perceptions about introducing evidence-based design to beginning design students to begin development of critical thinking skills early in beginning design education. The quantitative data used primarily provided an overview of demographic information and trends, while the qualitative data provided insight into faculty perceptions. The findings revealed the following implications, with the qualitative data producing the most enlightening responses.

The dominant implication found in this research about educators’ perceptions about introducing evidence-based design to beginning design students is the role of faculty. This may appear obvious at first, given that faculty teach. However, this research shows their role in this subject goes beyond teaching. For example, many educators who participated in this study indicated their knowledge about evidence-based design is good or advanced, yet many also have fair knowledge or do not know much at all.

Furthermore, most educators have not attended workshops or training on evidence-based design and do not plan to attend any. The major factors influencing faculty favorably
towards teaching evidence-based design are sources on the subject from their peers, related articles in teaching publications, and personal research. This may be due to lack of time, access to certain resources, awareness of evidence-based design, or even interest. More peer written sources (textbooks) and academic publications must become available on the subject if teaching evidence-based design to the beginning design student is to flourish.

A response in the IDEC study regarding general comments about evidence-based design indicated that adding practitioners to faculty helped faculty at the respondents’ institution to better understand the importance of evidence-based design. This clearly shows the significance of the role of practitioners in working with educators to bridge the profession and academics, especially in design.

Although elements and principles of design were identified as the main objectives of beginning design courses, research skills garnered 47% of responses in both studies. Educators’ responses on benefits of introducing evidence-based design to beginning design students showed educators’ from each study had converse opinions about “Learning to conduct research” and “Learning to locate credible sources”. Each ranked least important by NCBDS 2011 respondents and most important by IDEC respondents. These responses may imply that research skills are perceived as more important objectives to these respondents than initially conveyed.
In both studies, similarities among topics educators ask guest speakers to discuss include sustainability and color/light. However, the significance lies in the dramatic differences. The rationale behind the question was to determine if educators use guest speakers to introduce evidence-based design to beginning design students. Not surprisingly, given the NCBDS 2011 study consisted of mostly of educators in an architecture program, and the IDEC study consisted of interior design educators, the finishes/furnishings had the majority of responses as topics for guest speakers in the IDEC study but had zero responses in the NCBDS 2011 study. Collaboration and fine art also stood out as a difference with higher percentage of responses in the NCBDS 2011 study than the IDEC study, which is somewhat surprising due to the importance of collaboration and references to fine art in both architecture and interior design.

Also surprising was that “Stronger collaboration skills” ranked most important by NCBDS 2011 respondents and closer to most important by IDEC respondents in Question 17. The inconsistency in one question and the consistency in the other may simply be due to speaker availability and have no significant implications. Also, this may be due to the student level, academic home, institution requirements, and design program. No responses indicated that guest speakers are asked to speak to beginning designs students about evidence-based design, although this was not a predetermined selection in the question.

In both studies respondents indicated they incorporate information about human factors and the study of ergonomics, anthropometrics, and Proxemics at the beginning design
level, identifying the reasons for this as being to introduce human scale and scale/proportion to beginning design students; considered to be basics of design criteria in order to understand and design spaces; and, essential to designing for human use and understanding design. However, when asked if educators plan to teach evidence-based design to beginning design students the majority responded no.

Results coincide in both studies but are also surprising as human factors and the study of ergonomics, anthropometrics, and Proxemics are all rooted in evidence-based design, yet majority of respondents state they do not teach and do not plan to teach evidence-based design to beginning design students. A possible explanation may be due to the educators’ lack of understanding of the full definition of evidence-based design; or lack of awareness that human factors and the study of ergonomics, anthropometrics, and Proxemics are inherently included in the definition of evidence-based design.

NCBDS 2011 study respondents believe there is too much information to cover in evidence-based design, but if it is simplified it may be alright to mention it to beginning design students. IDEC study respondents believe evidence-based design is important as a research/design methodology; and, it is important for students to begin to develop the habit of making informed decisions from the beginning. Although these responses initially appear to be contradictory, the willingness of educators to consider mentioning evidence-based design to beginning design students if simplified, the belief that it is an important design methodology, and the importance of developing research habits early, may imply that educators would consider teaching evidence-based design to beginning
design students. Additionally, an IDEC theme of not teaching evidence-based design to beginning design students because it is covered at a later time does not indicate an academic reason to delay teaching this method. This may suggest that curriculum reviews are needed and educators would be willing to consider teaching evidence-based design to beginning design students.

In Question 15, major themes in the two studies are related in that analysis, critical thinking and research habits converge within evidence-based design. One response in the IDEC study clearly shows a willingness to reconsider teaching evidence-based design to beginning design students indicating that the respondent “could change my mind over time as it becomes more affirming of how it helps beginners”; implying that educators may incorporate evidence-based design into beginning design courses if new research show benefits for their students. Another IDEC response introduced the notion that educators who have taught upper level courses may already see the benefits of learning evidence-based design for beginning design students. This may be due to educator’s education, understanding of evidence-based design, experience with upper-level students, design program, academic home, or institution type.

In Question 16, when asked at what level they believe evidence-based design should be introduced to design students, NCBDS 2011 educators indicated the beginning design level; and, IDEC educators indicated the advanced or upper level. However, for Question 13, NCBDS 2011 respondents indicated they believe evidence-based design should not be introduced to the beginning design student; and, IDEC respondents indicated they
believe it should. This inconsistency may be due to several reasons. First, various definitions among some educators about the levels of design education may prevail. Next, ways to adapt teaching evidence-based design to align with different design education levels may not be apparent. Finally, the questions may have been unclear.

NCBDS 2011 study educators consider possible outcomes of introducing evidence-based design to be fostering critical-thinking, too much information, and stifles creativity; while IDEC study educators indicated giving students a better understanding and appreciation for credible research; and, if introduced in the freshman/sophomore years, evidence-based design can be applied in junior/senior years. These responses imply that if beginning design students are introduced to evidence-based design at an early level, by the time they reach upper level courses, they will be able to conduct research faster and make informed decisions. This also implies that students will adapt to the workplace faster, make better entry-level designers, and be better prepared for graduate school, if they decided to further their education.

An IDEC study response regarding future projections about teaching evidence-based design to beginning design students suggested that faculty education may be a factor because of generational differences in faculty’s design education. The response implies that not only education of the faculty might be a factor, but generational factors may also come into play.
General comments responses showed that evidence-based design: hinders creativity so a balance with creativity is required; masks discomfort with public perception of the profession; can close the gap between academic research and design practice once it becomes the norm; and, is needed by student to support their designs. Based on these responses, educators from both studies appear to believe that introducing evidence-based design to beginning design student would be beneficial even though a few believe it would be too much information for student or it may stifle creativity.

Chapter VII. Study Conclusions

A number of survey questions were included to determine their influence, if any, on educators’ perceptions about teaching evidence-based design to beginning design students. To summarize, the following information was gathered in this research.

Contradictory Results

In the NCBDS 2011 Study:

1. Consisted of mostly female Assistant Professors with 2-5 years experience in an Architecture program
2. Most described knowledge of evidence-based design as mostly good or advanced but fair or poor make up majority when combined
3. Most do not believe evidence-based design should be introduced to beginning design students
4. Most think evidence-based design should be introduced at the beginning design level
5. Most ranked beginning design students learning to conduct research and to locate credible sources as not important

In the IDEC Study:

1. Consisted of mostly female Professors/ Associate Professors with 20-25 years experience in Interior Design program
2. Most described knowledge of evidence-based design as mostly good or advanced
3. Most believe evidence-based design should be introduced to beginning design students
4. Most think evidence-based design should be introduced at the upper level
5. Most ranked beginning design students learning to conduct research and to locate credible sources as important

Consistent Results

In both the NCBDS 2011 Study and the IDEC Study:

1. Majority do not teach evidence-based design to beginning design students
2. Of those that do teach evidence-based design to beginning design students, the majority incorporate with the Design Process
3. Most do not plan to teach evidence-based design to beginning design students because it is done in upper level courses
4. Most have not attended and do not plan to attend training or workshops on evidence-based design
5. Most get information on evidence-based design from colleagues and teaching publications
6. Majority incorporate human factors, ergonomics, anthropometrics, and Proxemics at the beginning design level referring to this as the basis for design
7. Most ranked improving design solutions; stronger collaboration skills; and, improved client and user outcomes, as important
8. Most identified faculty as the factor that will most significantly affect the success of introducing evidence-based design to beginning design students at their institutions
9. Most identified research skills as an objective of beginning design courses, with elements and principles of design as the major objectives

The role of faculty in teaching evidence-based design to beginning design students is affected by the following factors:

1. Knowledge level
2. Educators influence educators
3. Need for more textbook sources and academic publications
4. Practitioners’ role in design education
5. Research as an objective in beginning design courses
6. Lack of association of evidence-based design with human factors, ergonomics, anthropometrics and Proxemics
7. Willingness to reconsider incorporating evidence-based design into beginning design courses pending more information
8. When introducing evidence-based design in beginning design education, application of evidence-based design can occur in upper-level design education
9. Possible generational considerations of faculty

In closing, several general conclusions from this research are worth noting. First, results of particular significance were findings in both studies where there were two contradictory statements. In the NCBDS 2011 study, when asked if they believed evidence-based design should be introduced to beginning design students, respondents indicated no. Yet, when asked at what level they thought evidence-based design should be introduced to beginning design students, respondents said at the beginning design level.

In the IDEC study, when asked if they believe evidence-based design should be introduced to beginning design students, respondents indicated yes. Yet, when asked at what level they thought evidence-based design should be introduced, respondents said at the upper level. The fact that these confounding results occurred in both studies shows a disconnection that calls for further investigation.

Finally, what may be the most significant finding of the study showed that most educators surveyed incorporate human factors, ergonomics, anthropometrics, and Proxemics, at the beginning design level. By definition, this means evidence-based design is already being taught at the beginning design level but is not recognized by
educators or conveyed to their students. As evidence-based design is a new concept to
design educators, practitioners, and students, future research and publications must
distinguish what evidence-based design is and is not to the design profession.

Chapter VIII. Limitations

Probably the most significant limitation of this research lies in the low response rate for
both studies, but especially the IDEC study. The NCBDS 2011 response rate may be low
due to time restraints placed on participants while attending the conference. The IDEC
study response rate may be higher if the survey had been sent out prior to the end of the
spring semester, as many educators may not teach during summer months.

Other limitations may be the use of certain questions; specifically those which had to be
omitted for various reasons; those which may have been misinterpreted by respondents;
or those where statistics were less meaningful.

Chapter IX. Future Research

The varied results for both studies raised more questions and have implications for future
research. The results of these studies show this is only a small step toward a better
understanding about teaching evidence-based design to beginning design students. A
need exists for subsequent research in multiple areas. An in-depth understanding about
what role gender, teaching experience, institution type, academic home, and program
type may have in educators’ perceptions about teaching evidence-based design to
beginning design students needs further exploration.
Studies that involve design practitioners would be another research avenue that would bring more clarity to this issue. Particularly interesting and perhaps most significant was the response in the IDEC study, “The addition of practitioners to the faculty helped us to understand the importance of evidence based design.” This clearly shows the significance of practitioners in design education. Future research involving design practitioners is needed to understand their views on evidence-based design and introducing it into beginning design education. This information would be beneficial to help practitioners understand how their role in design education will advance the development of the profession.

Studies involving beginning design and upper-level design students would provide insight into their ideas about when the best time to teach them evidence-based design might be. A study that follows design students who are taught evidence-based design from their first beginning design course until they have experience as entry-level designers; and, compares these students with students who are taught evidence-based design at the upper-level would be helpful toward finding tangible results about how this may affect their critical thinking skills.

The role of professional organizations should be explored to determine if members recognize the importance of their role in education and the advancement of the profession. Committees may be formed to brainstorm on ways to strengthen the relationship between academia and the profession. Their insight may prove to be
extremely significant in design faculty education, and consequently design student education.
References


Niederhelman, M. (Summer 2001). Education through design. *Design Issues*, 17(3), 83-


Appendices

Appendix A: Beginning Design Conference Educator Survey Questionnaire

Design Educator Survey Questionnaire

April 2011

As a graduate student at the University of Nebraska at Lincoln and in preparation for my thesis, I produced this survey to gain a better understanding about teaching evidence-based design to beginning design students. This survey has been approved by the Institutional Review Board at UNL. Your responses to the following questions will provide valuable information for my thesis, future research, interior design education, and the interior design profession. Any personal information you choose to provide will remain strictly confidential and used for the purposes of this research only. If you would like to find out the results of this research, please contact me at the email address below.

Thank you for your participation.

Most Sincerely,
Deborah R. Dunlap

General Organization

1) In which type of design program do you teach?

[ ] Interior Design [ ] Architecture [ ] Interior Architecture

[ ] Other: __________________________

2) In which academic home is your design program located in?

[ ] Art [ ] Architecture [ ] Human Sciences

[ ] Other: __________________________

3) What type of higher education organization do you work at?

[ ] Community college/vocational institute [ ] Private 4 year college

[ ] Public 4 year college [ ] Private comprehensive institution

[ ] Public comprehensive institution [ ] Online college or university

[ ] Other: __________________________
4) Which of the following best describes the manner in which the interior design program at your school is developed?

- Based on accredited guidelines (CIDA, NAAB, NASAD, etc.)
- Panel or Board
- Individual instructor
- Other: [ ]

5) Where is ‘Foundation Design’; ‘Core Courses’; or ‘Beginning Design’ placed in your school’s interior design program?

- Prerequisite: Prior to admission to upper level courses
- Orientation toward specialization at the end of preliminary study
- Area of specialization determined from the start
- Other: [ ]

6) What is the duration of the ‘Foundation Design’; ‘Core’; or ‘Beginning Design’ courses in your school’s program?

- First year or Freshmen
- Second year or Sophomore
- Both First and Second year
- Throughout the entire course of study
- Other: [ ]
7) **What are the qualifications of the teachers at your school? Check all that apply.**

- Professional Architect
- Professional Interior Designer
- Design Educator with Masters Degree
- Design Educator with Doctoral Degree
- Beginning Design Educator with Masters Degree
- Beginning Design Educator with Doctoral Degree
- NCIDQ
- LEED
- Other: ________________________________

8) **What are the objectives of the Basic or Foundation Design courses at your school? Check all that apply.**

- Elements of Design
- Principles of Design
- Studio Methods
- Project Preparation
- Research Skills
- Follow Directions
- Time management
- Spatial Analysis
- Technology
- Other: ________________________________

9) **Do you incorporate guest speakers in your beginning design courses?**

- Yes
- No
9a) If so, what are their professions? Check all that apply.

- Architect
- Interior Designer
- Vendors
- Lighting Expert
- Manufacturers
- Sales Representatives
- Artist/Renderer
- Project Manager
- Marketing Specialist
- Other:

9b) If so, what topics do you typically have them speak on? Check all that apply.

- Color/ Lighting
- Sustainability
- Collaboration
- Technology
- Finishes/Furnishings
- Fine Art
- Textiles
- Aging in Place
- Business Strategies
- Other:

10) Do you incorporate information about human factors and the study of ergonomics, anthropometrics, and proxemics at the Basic Design or Foundation level?

- Yes
- No

10a) Why or Why not?
11) Describe your knowledge about Evidence-Based Design. (Hamilton and Watkins define evidence-based design (EBD) as 'a process for the conscientious, explicit, and judicious use of current best evidence from research and practice in making critical decisions, together with an informed client, about the design of each individual and unique project'.

- Excellent; Expert
- Good; Advanced
- Fair; Need to gain more knowledge
- Poor; Do not know much at all.
- None; Never heard of it.

12) Describe your experience with Evidence-Based Design.

- Substantial
- Some
- Limited

13) In your opinion, do you believe evidence-based design should be introduced to the beginning design student?

- Yes
- No

13a) Why or Why not?

14) Do you or your program currently teach evidence-based design to beginning design students?

- Yes
- No

---

14a) If yes, how do you incorporate teaching evidence-based design into your beginning design classroom? Check all that apply.

- Independent of other material as an individual topic
- Incorporated with Elements and Principles of Design
- Incorporated with the Design Process
- Other:

14b) If no, do you plan to teach evidence-based design to your students in the future?

- Yes
- No

14c) Why or Why not?

15) If you answered yes to #14, what is your main purpose for introducing evidence-based design to the beginning design student?
16) At what level do you think evidence-based design should be introduced to design students? Check all that apply.

- Beginning Design, Basic Design or Foundation Students
- Advanced or Upper-level Design Students
- Graduate Students
- Integrated throughout the duration of the design course studies
- After graduation as entry-level designers
- Not at all

17) Please rank the following benefits of introducing evidence-based design to design students by importance with 1 being least important and 5 being most important.

<table>
<thead>
<tr>
<th>Benefit</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to conduct research</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Learning to locate credible sources</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Improving design solutions</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Stronger collaboration skills</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Improve client and user outcomes</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
</tbody>
</table>

18) How long have you been teaching beginning design students?

- 0-2 years
- 2-5 years
- 5-10 years
- 10-15 years
- 15-20 years
- 20-25 years
- 25-30 years
- 30+ years
19) Have you attended any training sessions or workshops on evidence-based design?

☐ Yes ☐ No

20) Do you plan to attend any training sessions or workshops on evidence-based design?

☐ Yes ☐ No

21) From which of the following sources do you get evidence-based design learning ideas? Check all that apply.

☐ Training Sessions or Workshops

☐ Teaching Publications

☐ Colleagues

☐ Online Sources

☐ Other: ______________________________

22) Please tell us any additional or general comments and/or opinions you may have about evidence-based design.

23) Please tell us any additional or general comments and/or opinions you may have about beginning design students.
24) What do you think the outcome of introducing evidence-based design to beginning design students might be?

Demographic Information

PLEASE ONLY INCLUDE INFORMATION WHICH YOU FEEL COMFORTABLE PROVIDING.

25) What is your occupation? (Please select your primary job function)

- Associate Instructor/Graduate Student Instructor
- Part-Time Instructor
- Assistant Professor
- Academic staff
- Other: 

26) Please indicate your gender.

- Male
- Female

27) Where are you located (e.g., city, state/province, and country)?

28) What is the name of your college, university, or organization? Remember: please only include information that you feel comfortable in providing.

Beginning Design Conference Educator Survey Questionnaire Page 9
29) What types of degrees, programs, or credentials does your college, university, or organization currently offer through online learning (either in partnership with other organizations or by itself)? Check all that apply.

- Certificates
- Associate degrees
- Master’s degrees (other than MBA)
- Doctoral degrees
- Other: ______________________________

Future Projections about teaching Evidence-Based Design to Beginning Design Students (Please make your best guesses.)

30) During the next few years, which factors will most significantly affect the success of introducing evidence-based design to beginning design students at your institution?

31) If you wanted to obtain a book, technical report, or whitepaper related to teaching evidence-based design and/or beginning design students in higher education during the next year, which topic or content area would you be most interested in? Check all that apply.

- Evidenced-based design basics
- Beginning design students
- Teaching methods for evidence-based design
- Teaching methods for incorporating evidence-based design into basic design courses for beginning design students
- Not interested
- Other: ______________________________
Final Comments

32) Feel free to list additional comments related to any of the items in this survey, especially regarding the future of evidence-based design, the beginning design student or both. Actual stories and future predictions are welcome.

END SURVEY. THANK YOU AGAIN FOR YOUR PARTICIPATION.
### Appendix B: Interior Design Educators Council Electronic Educator Questionnaire

**1. In which type of design program do you teach?**
- Interior Design
- Architecture
- Interior Architecture
- Other [ ]

**2. In which academic home is your design program located in?**
- Art
- Architecture
- Human Sciences
- Other [ ]

**3. What type of higher education organisation do you work at?**
- Community college/vocational institute
- Private 4 year college
- Public 4 year college
- Private comprehensive institution
- Public comprehensive institution
- Online college or university
- Other [ ]

**4. Which of the following best describes the manner in which the interior design program at your school is developed?**
- Based on accredited guidelines (CIDA, NAID, FASID, etc.)
- Panel or Board
- Individual instructor
- Other [ ]

**5. Where is Foundation Design / Core Courses / Beginning Design placed in your school’s interior design program?**
- Prerequisite, prior to admission to upper level courses
- Orientation toward specialization at the end of preliminary study
- Line of specialization determined from the start
- Other [ ]

**6. What is the duration of the Foundation Design / Core / Beginning Design courses in your school’s program?**
- First year of Freshman
- Second year or Sophomore
- Both First and Second year
- Throughout entire course of study
- Other [ ]

**7. What are the qualifications of the teachers at your school? Check all that apply:**
- Professional Architect
- Professional Interior Designer
- Design Educator with Bachelors Degree
- Design Educator with Masters Degree
- Beginning Design Educator with Masters Degree
- Beginning Design Educator with Doctoral Degree
- NCSI
- LEED
- Other [ ]

**8. What are the objectives of the Basic or Foundation Design courses at your school? Check all that apply:**
- Elements of Design
- Principles of Design
- Studio Methods
- Project Preparation
- Research
- Furniture
- Color
- Color
- Lighting
- Other [ ]

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**IDECC Educator Electronic Survey Questionnaire Page 1.**
16. If you answered yes to #15, what is your intended purpose for introducing evidence-based design to the beginning design student?

17. At what level do you feel evidence-based design should be introduced to design students? Check all that apply.
   - Beginning Design, Basic Design or Foundation Students
   - Advanced or Upper-level Design Students
   - Graduate Students
   - Required throughout the duration of the design course content
   - After graduation or early/level development
   - Not at all

18. Please rate the following benefits of introducing evidence-based design to design students by assigning with a 1 being least important and 5 being most important.

Learning to conduct research
Learning to make evidence-based decisions
Improving design outcomes
Stronger collaboration skills
Enhanced client and user satisfaction

19. How long have you been teaching beginning design students?
   - 0-2 years
   - 3-5 years
   - 6-10 years
   - 11-15 years
   - 16-20 years
   - 21-25 years
   - 26-30 years
   - 31 years or more

20. Have you attended any training sessions or workshops on evidence-based design?
   - Yes
   - No

21. Do you plan to attend any training sessions or workshops on evidence-based design?
   - Yes
   - No

22. From which online learning resources do you get evidence-based design learning materials? Check all that apply.
   - Training sessions or workshops
   - Knowledge institutions
   - Colleges/universities
   - Online resources
   - Other

23. Please list up any additional or general comments or opinions you may have about evidence-based design.

24. Please list an additional or general comments or opinions you may have about beginning design students.

25. What do you think are subterfuge of introducing evidence-based design to beginning design students might be?

26. Please check if you agree or disagree with the following statements:

27. Please indicate your gender:
   - Male
   - Female

28. Where are you located (city, state, country)?

29. What is the name of your college, university, or organization? Remember: Please only include information that you feel comfortable in providing.

30. If you are required to introduce evidence-based design or alternative materials, or design curricula currently offered through on-line learning either as an adjunct to or a partnership with other organizations or by other means, check all that apply.
   - Certificates
   - Associate degrees
   - Bachelor's degrees
   - Undergraduate programs
   - Master's, degrees (other than MFA)
   - Professional, education/MPA programs
   - Doctoral degrees
   - Other

Future projection about teaching evidence-based design to beginning design students (Please state your best guess):

31. During the next five years, which factors do you think will most significantly affect the success of introducing evidence-based design to beginning design students at your institution?

32. Please leave any additional comments related to any of the items in this survey, especially regarding the future of evidence-based design, the beginning design student's role, collaboration, and future professions and courses.

IDECL Educator Electronic Survey Questionnaire Page 3.
Appendix C: Institutional Review Board E-mail and Consent Form with Hyperlink sent to IDEC Educators

{Email header}

{From: Deborah R. Dunlap [XXXX@XXXX.com]}

{Sent: Saturday, May 14, 2011 12:17 PM}

{To: XXXX@XXXX.com}

{Subject: Teaching Evidence-Based Design to the Beginning Design Student}

May 2011

Dear Fellow IDEC Member,

As a graduate student at the University of Nebraska at Lincoln and in preparation for my thesis, I produced this survey to gain a better understanding about teaching evidence-based design to beginning design students. This survey has been approved by the Institutional Review Board at UNL. Whether you currently teach beginning design students or not, your participation would be appreciated. Your responses to the following questions will provide valuable information for my thesis, future research, interior design education, and the interior design profession.

Please see the Informed Consent information below for important information about the survey. *Any personal information you choose to provide will remain strictly confidential and used for the purposes of this research only.*

To access the on-line survey, click the link after the Informed Consent information.

If you would like to find out the results of this research, please feel free to contact me at the email address below.

Thank you for your participation.

Most Sincerely,
Deborah R. Dunlap
XXXX@XXXX.com
Title of the Research:
Teaching Evidence-Based Design to the Beginning Design Student: Incorporating research in beginning interior design education to develop critical thinking skills

Purpose of the Research:
This research will explore educators’ opinions about teaching evidence-based design (EBD) to beginning design students and should be completed during the summer of 2011. You must be an educator in the design field. You are invited to participate in this study because you attended a conference on beginning design students, are a member of the Interior Design Educators Council (IDEC), or both.

Procedures:
Participation in this study will require approximately 15 minutes of your time, depending on the detail included in your responses. You will need to respond to questions in a 39-question survey consisting of multiple choice and short answer questions.

Risks and/or Discomforts:
There are no known risks or discomforts associated with this research. In the even of problems resulting from participation in the study, psychological treatment is available on a sliding fee scale at the UNL Psychological Consultation Center, telephone (402) 472-2351.

Benefits:
The information gained from this study may help to better understand the effectiveness of teaching evidence-based design to beginning design students versus introducing evidence-based design later in design education.

Confidentiality:
Any information obtained during this study which could identify you will be kept strictly confidential. The data will be stored in a locked cabinet in the investigator’s office and will only be seen by the investigator during the study and for three years after the study is complete. The information obtained in this study may be published in scientific journals or presented at scientific meetings but the data will be reported as aggregated data.

Compensation:
There will be no compensation for participating in this research.

Opportunity to Ask Questions:
You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study. Or you may call the investigator at any time, (704) 502-0591. Please contact the investigator:
- if you want to voice concerns or complaints about the research
- in the event of a research related injury.
Please contact the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965 for the following reasons:

- you wish to talk to someone other than the research staff to obtain answers to questions about your rights as a research participant
- to voice concerns or complaints about the research
- to provide input concerning the research process
- in the event the study staff could not be reached.

**Freedom to Withdraw:**

Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers or the University of Nebraska-Lincoln, or in any other way receive a penalty or loss of benefits to which you are otherwise entitled.

**Consent, Right to Receive a Copy:**

You are voluntarily making a decision whether or not to participate in this research study. Your returned completed survey certifies that you have decided to participate having read and understood the information presented. The electronic attachment serves as your copy.

**Name and Phone number of investigator(s)**

- Deborah R. Dunlap, Graduate Student, Principal Investigator  
  Office: (xxx) xxx-xxxx
- Betsy S. Gabb, Ed.D., Secondary Investigator  
  Office (xxx) xxx-xxxx

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**Survey Link:**

https://qtrial.qualtrics.com/SE/?SID=SV_50hXb8ky2oOKT7m
Appendix D: United States Census Regions and Divisions.

Source: United States Census Bureau Website, Census Regions and Divisions Page, 2011.