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EVIDENCE-BASED SERVICE-LEARNING INTERIOR DESIGN PROJECTS
ENGAGING UNDERGRADUATE STUDENTS AND ADVANCING THE INTERIOR
DESIGN BODY OF KNOWLEDGE

By

Ann Marie Ragan

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Lincoln, Nebraska

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EVIDENCE-BASED SERVICE-LEARNING INTERIOR DESIGN PROJECTS
ENGAGING UNDERGRADUATE STUDENTS AND ADVANCING THE INTERIOR
DESIGN BODY OF KNOWLEDGE

Ann Marie Ragan, M.S.

University of Nebraska, 2013

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Expanding the current interior design body of knowledge (BOK) is essential to the continued development of the interior design profession (Birdsong & Lawlor, 2001; Clemons & Eckman, 2011; Dickinson, Anthony, & Marsden, 2009; Dickinson, Anthony, Marsden, & Read, 2007; Dickson & White, 2009; Guerin & Martin, 2001, 2004, 2010; Martin & Guerin, 2006). The increased use of evidence-based design (EBD) projects in the interior design industry offers interior designers the opportunity to conduct research studies with the potential to create better designs and to expand the existing interior design BOK. Incorporating the EBD process into service-learning projects has the potential to engage interior design students in conducting research, demonstrate how research is utilized in the design process, and assist students with understanding the importance of conducting research as an interior design professional.

The purpose of this quantitative and qualitative research study was to explore EBD knowledge of interior design students participating in a service-learning project utilizing a combination of qualitative and quantitative research methods to examine if service-

learning projects used to teach EBD are an effective means for teaching the importance of conducting research to future interior designers. Third-year students enrolled in the interior design program at North Dakota State University were surveyed to determine their current EBD knowledge. The most significant finding of this research was that students thought the interior design profession benefited from interior designers conducting research. All the students indicated an interest in service-learning projects and an interest in interior design studio projects that incorporated real clients and spaces.

Determining the most effective types of projects to utilize when teaching EBD to interior design students could impact students' perception of the importance of research to the interior design profession. Providing faculty with a means to engage students in research could encourage future interior designers to incorporate research into their professional work, expanding the interior design BOK in the process.

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Dedication

This work is dedicated to my amazing husband Patrick whose love, patience, and encouragement has provided me fuel for this journey.

Thank you for believing in me.

Acknowledgements

Special thanks to my parents Michael and Francene for their unconditional love and who encouraged me to do what I love.

Thanks to my family, Benjamin, Olivia, Dominic, Molly, Samantha, Michael, Wes, and Ike who understood, patiently waited for me to finish, and supported me along the way.

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Chapter 1: Statement of the Problem

The need to expand the interior design body of knowledge (BOK) is essential to the development of interior design as a profession (Birdsong & Lawlor, 2001; Clemons & Eckman, 2011; Dickinson, Anthony, & Marsden, 2009; Dickinson, Anthony, Marsden, & Read, 2007; Dickson & White, 2009; Guerin & Martin, 2001, 2004, 2010; Martin & Guerin, 2006).

If interior design is to achieve the status of a discipline with a constantly growing knowledge base, it must become a collective body of educators, researchers, and practitioners, as well as industry experts focusing not only on designing better interior environments for people but also on generating new knowledge and improved theories of explanation (Hasell, p. 1, 1993).

For the past two decades interior design leaders, educators, and professionals have worked toward establishing and advancing interior design as a profession through the development and analysis of the interior design profession's Body of Knowledge (BOK) (Birdsong & Lawlor, 2001; Clemons & Eckman, 2011; Dickinson, Anthony & Marsden, 2009; Dickinson, Anthony, Marsden & Read, 2007; Dickson & White, 2009; Guerin & Martin, 2001, 2004, 2010; Martin & Guerin, 2006). Martin and Guerin (2006) defined a profession's BOK as being, "The abstract knowledge needed by practitioners to perform the profession's work" (p. viii). As noted by Abbott and cited in Martin and Guerin (2006) the interior design profession's BOK is defined as being:

Abstract knowledge is what an interior design practitioner knows and applies to a design project. This is not to be confused with the skills designers need to

practice or tasks designers are required to perform. It is the currency of a profession; it is what makes a profession legitimate and valued by the public (Abbott, 1998) (p. viii).

Identifying knowledge unique to the profession through the analysis of an existing body of knowledge further defines the profession and separates it from similar professions, i.e. interior decoration and architecture (Dickson & White, 2009; Guerin & Martin, 2001, 2004, 2010; Martin & Guerin, 2006).

Developing an existing BOK involves the participation of those within the profession being willing to conduct research and develop theories connected to the work being done by practicing professionals. In the 2010 research study titled *The Interior Design Profession's Body of Knowledge and Its Relationship to People's Health, Safety, and Welfare* Guerin & Martin (2010) identified “evidence-based recommendations” with the hope that they “will be considered in light of their contributions to the profession’s continued development” (p. 202). Evidence-Based Design (EBD) has the potential to provide a purpose for professionals to conduct research. EBD is defined by Nussbaumer (2009) as “the approach that designers take to attain the highest quality of research that leads them to the best possible design solutions” (p. 4). The connection between research and the design process exists, however what type of research is dependent on the phase of the design process and the project type (Nussbaumer, 2009, p. 9-10). Research as a broad term can take on different meanings, as noted by Wang cited in Nussbaumer (2009) the two most common types of research are “fact finding” and “research”:

To help us understand the difference between fact finding and research, Wang (2007) defines fact finding as “dealing with facts that already exist (e.g., the number of chairs at the table), whereas research (e.g., placement of a chair or chairs related to psychological needs) seeks to produce new knowledge in recognizable ways that can usually be applied regardless of locale” (p. 35) (p. 8).

The increased use and successful completion of EBD projects within the interior design profession illustrates an increasing need to incorporate studio projects designed for students to develop skills necessary to execute EBD solutions (Zborowsky, 2010; Martin, 2010). Studio projects focused on EBD have the potential to teach students how to incorporate research into the design process (Zborowsky, 2010, p.136-137). According to Zborowsky, “If we see this as an opportunity to challenge our traditional approach both to education and practice, then we can not only integrate research in practice, but we can sustain it by embedding it into our interior design process” (Zborowsky, 2010, p. 136). EBD utilized in undergraduate studio projects, affords students the opportunity to learn the different ways research can be used during the various phases of the design process (Zborowsky, 2010 & Zeisel, 2006). Service-learning studio projects are one type of EBD project that gives students the chance to apply EBD to real-life scenarios (Pable, 2010, p. 124). The direct application of research to real-life design problems has the potential to show how tightly connected research can be to the design process.

Service-learning studio projects have been previously used to engage interior design students through the experience of working with real clients (Dohr & Portillo, 2011; Flannery, 1993; Pable, 2007; Read & Stadler, 2002; Zollinger et al., 2009). The introduction of a client to a studio project introduces several challenges for the instructor, including but not limited to scheduling conflicts between the client's schedule, students' schedule, and academic schedule (Dohr & Portillo, 2011; Flannery, 1993; Pable, 2007; Read & Stadler, 2002; Zollinger et al., 2009). An additional challenge of using service-learning projects is matching the client's needs with the curriculum requirements (Dohr & Portillo, 2011; Flannery, 1993; Pable, 2007; Read & Stadler, 2002; Zollinger et al., 2009). However, if the interior design program is accredited through an accrediting organization such as the Council for Interior Design Accreditation (CIDA) faculty must ensure the proper professional standards are being met. Although these challenges exist the continued use of service-learning projects eludes to their successful contribution to the curriculum.

Service-learning projects have the potential to assist accredited programs or programs applying for accreditation with meeting CIDA professional standard 7, "Professionalism and Business Practice" (Council for Interior Design Accreditation, 2012, p. II-17). Standard 7 states that, "Entry-level interior designers use ethical and accepted standards of practice, are committed to professional development and the industry, and understand the value of their contribution to the built environment" (Council for Interior Design Accreditation, 2012, p. II-17). In order to meet this standard the interior design program must provide "exposure to the role and value of: j) public and community service"

(Council for Interior Design Accreditation, 2012, p. II-17). This recognition of community service within the CIDA accreditation professional standards acknowledges the importance of incorporating service-learning projects into accredited interior design curriculum. According to the CIDA website:

Professional level programs accredited by the Council for Interior Design Accreditation (CIDA) voluntarily place themselves before the scrutiny of the profession to ensure that students receive an education that will serve them not only during their time at school, but also prepare them for future professional growth. Students enrolled in an accredited interior design program can be confident that the program meets the quality standards recognized by the profession (para. 1).

Community service being mentioned in standard 7 of the CIDA professional standards acknowledges that community virtue is an expectation of all professional interior designers and that CIDA accredited programs are obligated to prepare students to be resourceful and civic-minded professionals.

Compared to previous generations, the current generation of students is more aware of the extent to which we impact one another and the world by playing an active role in global society through various technologies and social networks (Howe & Strauss, 2000, p.301). The global awareness of this generation has the potential to aid in the effectiveness of the service-learning project in the classroom. The current generation of students wants to be more than information seekers; they want to be actively involved in

the happenings of the world around them (Howe & Strauss, 2000, p.301). Service-learning projects allow them the level of engagement they seek.

The impact of research on the interior design profession is substantial and requires the engagement of not only practicing professionals, but future designers. Service-learning studio projects focused on EBD solutions have the potential to engage interior design students in the process of research and help students to see the connection between research and design solutions. Higher levels of engagement and direct connections to real-life design problems could lead to an increased understanding of the importance of research to the design profession, and future practitioners utilizing and/or conducting research. The purpose of this quantitative and qualitative research study is to explore EBD knowledge of interior design students participating in a service-learning project.

The perpetual evolution of the BOK demands the perpetual analysis of the BOK. The next generation of interior designers needs to become engaged in the activity of research to ensure the continued development of the interior design body of knowledge (Dickinson, Anthony & Marsden, 2009; Dickinson, Anthony, Marsden, & Read, 2007; Guerin & Martin, 2001, 2004, 2010; Guerin & Martin, 2006). The engagement of the next generation of interior designers is the responsibility of the faculty who teach these students and the professionals who hire, work, and act as mentor's to future designers.

Chapter II: Literature Review

Significant research exists about EBD, the interior design BOK, the professionalization of the interior design profession, and service-learning as individual topics. Information and research connecting EBD, the interior design BOK, and the professionalization of the interior design profession does exist and seems to be increasing in recent years. Service-learning research exists in a variety of fields and there seems to be a substantial amount of information on conducting research focused on service-learning and several examples of successful models for incorporating a service-learning project into a course or curriculum. Information about teaching EBD in the classroom through the use of service-learning studio projects is minimal at best. Current literature about EBD knowledge of interior design students participating in a service-learning project is virtually non-existent.

Research and the Interior Design Profession

Engaging future generations of interior designers in the activity of research can be a challenge at the undergraduate level (Dickinson, Marsden, & Read, 2007; Zollinger, Guerin, Hadjiyanni, & Martin, 2009; Zuo, Leonard, & MaloneBeach, 2010).

Professional and educational issues are evident when considering undergraduate student engagement in research when related to expanding the current interior design BOK.

Professionals' perception and participation or lack of participation has an impact on future interior designers' attitudes toward research (Birdsong & Lawlor, 2001; Clemons & Eckman, 2011; Dickinson, Anthony, & Marsden, 2009; Dickson & White, 2009).

Professional issues associated with conducting research have the potential to deter those entering the interior design field from conducting research of their own. This lack of participation has the potential to be detrimental in the development of interior design as a profession (Birdsong & Lawlor, 2001; Clemons & Eckman, 2011; Dickinson, Anthony, & Marsden, 2009; Dickson & White, 2009).

Expanding the interior design profession's BOK is not the sole responsibility of faculty and graduate students at various colleges and universities (Birdsong & Lawlor, 2001; Clemons & Eckman, 2011; Dickinson, Anthony, & Marsden, 2009; Dickson & White, 2009; Guerin & Martin, 2001, 2004, 2010; Martin & Guerin, 2006). Professionals play a valuable and essential role in contributing to the current Interior Design Body of Knowledge through research conducted while working on various interior design projects (Birdsong & Lawlor, 2001; Clemons & Eckman, 2011; Dickinson, Anthony, & Marsden, 2009; Dickson & White, 2009; Guerin & Martin, 2001, 2004, 2010; Martin & Guerin, 2006).

Practitioners' perception of research.

Dickson and White (1993) conducted a study detailed in the journal article *Are We Speaking the Same Language? Practitioners' Perceptions of Research and the State of the Profession*. The intent of the Dickson and White (1993) research study was to determine the professional interior designers' perceptions of interior design research. Two surveys were created to determine "(1) the perceived purpose, need, and role of research for the interior design profession; (2) types of research used in practice; and (3)

sources of research used in practice” (Dickson & White, p. 5, 2009). The first survey “was sent to 54 persons and 32 (59%) responded” (Dickson & White, p. 5, 2009). The first survey was designed and distributed to what was described as “a panel of experts” from the Interior Design Educators Council (IDEC) and the results of the first survey contributed to the design of the second survey (Dickson & White, p. 5, 2009). The second survey was not sent to the same sample, instead “194 individuals from a broad geographic area were sent the questionnaire and 96 (49%) were eligible for further analysis” (Dickson & White, p. 5-6, 2009). The analysis of the data collected consisted of “cross-tabular presentation of data” and “statistical significance was determined using chi-square where possible” (Dickson & White, p. 5, 2009). It was noted that the Fisher Exact Test was used to ascertain statistical significance for tables with too few observations per cell. “The level of significance was set at .05” (Dickson & White, p. 5, 2009).

The results of the study indicated the pragmatic perspective of the design professions in regards to conducting research (Dickson & White, p. 9, 2009). Professional interior designers viewed research as information used after a research study has been conducted in the form of information gathering and in turn tended to not participate in the creation of empirical research (Dickson & White, p. 9, 2009). Dickson and White (1993) suggested educators play a primary role in the development of research that is designed to have the potential to be utilized in education, professional and industry environments. Dickson and White (1993) also stated that “It is essential that all of those involved in the profession of interior design recognize that it is the body of knowledge and a theoretical

base, which is supported by the generation of research, that separates a professional discipline from a trade school discipline” (p. 10). Not understanding the important contribution of empirical research conducted by professional interior designers can have detrimental results for the further development of the interior design profession.

Birdsong and Lawlor (2001) continued research on the perception of interior design practitioners in their study titled *Perceptions of Professionalism: Interior Design Practitioners Working for the Top 100 Firms*. This study delved deeper into the perception of what it means to be a professional interior designer. Birdsong and Lawlor (2001) focused their study around two research questions:

1. What are designers’ perceptions of the importance of specific components of a profession (that is accreditation of undergraduate interior design programs, state licensing, examination, graduate education, and research) for the profession as a whole?
2. What are designers’ perceptions of the importance of specific components of a profession (that is, accreditation of undergraduate interior design programs, state licensing, examination, graduate education, and research) for the individual practitioner? (p. 24).

The participants for the study were chosen from the Interior Design Magazine “100 Giants” list. Birdsong and Lawlor (2001) chose the “100 Giants” list with the assumptions that designers at these top firms are more concerned with professionalism, more apt to “support professionalism” (p. 24). Birdsong and Lawlor (2001) mentioned a

higher level of diversity amongst the designers since the firms are larger and employ more interior designers (Birdsong & Lawlor, p. 24, 2001). An additional reason for choosing the “100 Giants” is the enormous impact these firms have on the interior design industry (Birdsong & Lawlor, p. 24, 2001). 213 questionnaires were distributed to 43 firms, 115 from 34 firms were completed and used in the analysis (Birdsong & Lawlor, p. 24, 2001). The analysis of the data included the separation of data into categories that reflected the components of the interior design profession: “State licensed/certification/registration, NCIDQ certified, position title, professional organization membership, officer or was and officer of a professional organization” (Birdsong & Lawlor, p. 26, 2001).

The results of the Birdsong and Lawlor (2001) study indicated that practitioners recognize the importance of the components of the interior design profession with one distinct exception being the importance of a post-professional graduate degree (p. 32). Birdsong and Lawlor (2001) recognized that the study should be repeated and include more practitioners to increase the scope of the data. The article concluded with a challenge to practitioners and educators to find a way to increase communication and collaborative projects to increase practitioner understanding of the connection between professional interior design work and research (p. 33).

Interior design body of knowledge.

A series of three consecutive research studies conducted by Guerin and Martin (2001, 2006, 2010) help to define the BOK at different points in time and establish the

interrelationship between the profession and research conducted within the profession.

The first study, *The interior design profession's body of knowledge: Its definition and documentation* was commissioned by the Association of Registered Interior Designers of Canada and published in 2001. This qualitative study established the knowledge areas within the interior design profession based on the available interior design research. As research was collected, read, and coded, the information disseminated from the research identified “81 knowledge areas”, each of these 81 knowledge areas were then grouped into seven descriptive categories, creating the interior design BOK (Guerin & Martin, p. E5, 2010):

1. Human Needs
2. Codes
3. Interior Building Construction
4. Design
5. Furnishings, Fixtures, & Equipment
6. Professional Practice
7. Communication

Knowing this study was limited in regards to only showing a snapshot of the BOK for a particular period of time, the authors recognized that additional studies are needed and in 2006 with funding from five national interior design organizations Martin & Guerin conducted another research study to update and further analyze the research study from 2001. *The Interior Design Profession's Body of Knowledge 2005 edition* identified 96

knowledge areas that were sorted and organized into six weighted categories (Martin & Guerin, p. 44, 2006).

“The knowledge areas were weighted for importance to practice using the Career Additive Method, which used the documents’ internal weighting system multiplied by the number of times the keyword appeared in all documents” (Martin & Guerin, p. 22, 2006). The results of this study were examined by a third party research methodologist and it was concluded that “‘The study is sound. It is an advancement on defining Interior Design’s body of knowledge, and the established typology has validity’ (personal communication, February 5, 2006)” (Martin & Guerin, p. 37, 2006). Figure 2.1 demonstrates the re-organization of the seven descriptive categories from the 2001 study into six slightly modified weighted categories.

Connecting the interior design body of knowledge to professionalization.

In 2010 Guerin and Martin continued their detailed analysis of the interior design BOK through the research study, *The Interior Design Profession's Body of Knowledge and Its Relationship to People's Health, Safety, and Welfare*. The purpose of this study was to expand the analysis of the BOK by documenting the relationship to “health, safety, and welfare (HSW)” (Guerin & Martin, p. E1, 2010). This extensive research study stated five goals that were met through the execution of this research study:

1. Provide an empirical basis for a profession’s body of knowledge, relate the importance of a body of knowledge to professions, and document and assess interior design’s professionalization journey;

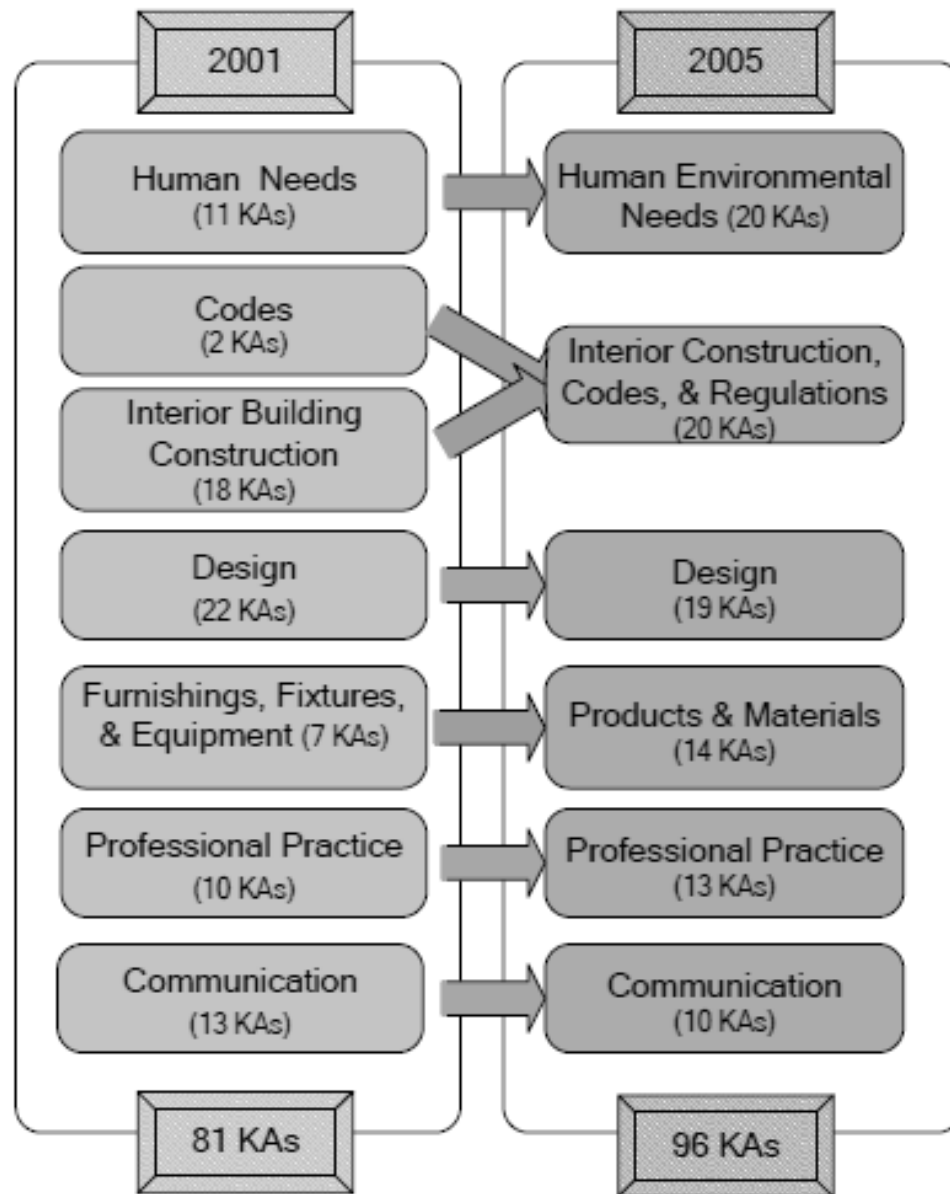


Figure 2.1. Category Comparison: 2001 Versus 2005 Body of Knowledge. Source: *The Interior Design Profession's Body of Knowledge- Its Definition and Documentation* (p. 35), by C. S. Martin & D. A. Guerin, 2006, Grand Rapids, MI: Council for Interior Design Accreditation, American Society of Interior Designers, Interior Designer of Canada, International Interior Design Association, and the National Council for Interior Design Qualification.

2. Compare 2010 interior design regulations to 2005 regulations and discuss the comparison as it relates to how interior design is defined and titled;
3. Define and describe HSW as related to interior design practice;
4. Update the interior design profession's BOK; and
5. Document and analyze the contribution of the interior design profession's BOK to HSW within the context of interior design practice (Guerin & Martin, p. E1, 2010).

The methods for collecting data for this complex research study were diverse and ranged from reviewing existing professionalization literature, current interior design literature, and conducting a survey of interior design practitioners (Guerin & Martin, 2010). The methods were designed to be used exclusively for each of the five goals previously mentioned (Guerin & Martin, 2010). Four overarching conclusions about knowledge area contributions to health, safety, and wellness were identified:

1. The survey findings provide evidence that the KAs [knowledge areas] contained in the BOK significantly contribute to interior design practitioners' ability and responsibility to protect the public's HSW;
2. The survey findings document that interior designers' specialized knowledge underpins their goal and responsibility of protecting people;
3. As evidenced in this study, the specialized knowledge provided by interior designers' education, experience, and examination (i.e., the BOK), shows they are prepared to protect people's HSW, and, in fact, prevent people from being harmed and, based on this evidence;

4. Interior design practice in public spaces must be regulated so that people know when they are receiving services from interior design practitioners who understand and apply the interior design profession's BOK and are able to design interior design environments that protect them (p. 201).

Guerin & Martin (2010) identified "evidence-based recommendations" with the hope that they "will be considered in light of their contributions to the profession's continued development" (p. 202). This Guerin & Martin (2010) research study provided evidence demonstrating the need for regulating the practice of interior design in public spaces and contributed to the interior design BOK since both authors are faculty teaching within the field of interior design. A clear connection exists between the research being conducted in this particular research study and the profession by presenting evidence to support the need for regulating the practice on interior design.

Using research to enhance interior design solutions.

As interior design professionals it is essential to consider the connection between research and practice. Studies with the potential to alter a design decisions and impact users can be found in a variety of forms and sources. Nippert-Eng's (2007) mixed methods research study provided an interior designer with detailed information regarding the psychological impact interior spaces have on people's sense of privacy in the United States. Data were collected and compiled using a combination of: (1) ethnographic observations at home, work and in public spaces; (2) literature review; (3) qualitative

analysis of print media; and (4) individual interviews (Nippert-Eng's, pg. 1, 2007). From this study two key findings were extrapolated. The first finding was that privacy seems to be an important consideration and worth the extra effort to ascertain what privacy might mean to the users of the space (Nippert-Eng's, 2007). A second finding was that "any design is likely to embody the conflicts of interests of multiple stakeholders and these conflicts are highly likely to show up in issues related to privacy" (Nippert-Eng's, pg. 9, 2007). Nippert-Eng's (2007) study is one example of a study conducted by a researcher outside of the interior design profession that included findings that may be utilized by an interior design professional to develop a design solution.

The United States General Services Administration (GSA) Office of Applied Science conducts a variety of research to create into reports containing information that could potentially be utilized in real interior design and other types of building projects. A 2008 the GSA published *Assessing Green Building Performance: A Post Occupancy Evaluation of 12 GSA Buildings* to be used not only by those directly responsible for the buildings but builders, developers, and designers to better understand which sustainable design solutions are working and which solutions are not. This white paper summarized research presented in a more detailed report *Assessing Green Building Performance: A Post Occupancy Evaluation of 12 GSA Buildings* conducted by Fowler and Rauch (2008) and published by the Pacific Northwest National Laboratory. The primary design question for this research study was "Does sustainable design deliver?" (United States General Services Administration, Office of Applied Science, p. 3, 2008). Several post occupancy evaluations were conducted using surveys given to current building occupants

and all the buildings were checked for environmental performances in the form of an analysis of data from various third party sources including, CBECS National Survey of Commercial Buildings, Energy Star, IFMA and BOMA, Federal Water Use Index, and the Center for the Built Environment (United States General Services Administration, Office of Applied Science, p. 3, 2008). The study determined that GSA green buildings “outperform national averages in all measured performance areas” (United States General Services Administration, Office of Applied Science, p. 4, 2008) It is entirely possible that a professional interior designer might utilize information from this study to determine what design elements contribute to the sustainability of a building.

This type of research, although valuable, does not contribute to the interior design BOK. According to Guerin & Martin (2001, 2004, 2010), in order for research to be considered a contribution to the interior design BOK it needs to be conducted by faculty or practitioners in the interior design industry (Guerin & Martin, 2001, 2004, 2010). Evidence-based or research based design has the potential to make a significant contribution to the interior design BOK if research is not only gathered and analyzed for valuable information, but conducted for a project by the designers themselves (Guerin & Martin, 2001, 2004, 2010).

Conducting research to expand design solutions.

Perkins + Will is an architecture, planning, interiors, and graphic design firm committed to not only gathering and investigating research for the creating of design projects, but to conducting research (Perkins + Will, 2012). The Perkins + Will Research Journal is a

peer reviewed journal committed to designing for “the greater good” by providing all of its research to the design industry and anyone interested, for no cost online (Perkins + Will, 2012). One such research study is *Transcending Project Type-Principles for High Performance Interior design: High Performance Interiors + Evidence Based Design* (Blumenfeld, BaRoss, & Dufner, 2009). Blumenfeld, BaRoss, & Dufner (2009) researched four trends (collaborative spaces, modularity/flexibility, daylighting, and sustainability) in “modern high-performance interior design” to determine if there were any means for measuring the benefits of each trend through the analysis of buildings and spaces designed with these trends in mind. Finding some trends to be more measurable than others, Blumenfeld, BaRoss, & Dufner (2009) indicated a need for research to be able to better measure the benefits of the trend (p. 104), tangible information in the form of metrics could provide a means for measuring and in turn a means for quantifying this valuable design information (p. 104).

The healthcare design industry has been on the forefront of implementing EBD (Bosch & Nanda, 2011; Hamilton & Watkins, 2009; Nussbaumer, 2009; Piotrowski, 2011; Ulrich, et al., 2008). The joint efforts of healthcare practitioners, administrators and those involved in the building industry have resulted in the complete restructuring of how healthcare facilities are built (Bosch & Nanda, 2011; Hamilton & Watkins, 2009; Nussbaumer, 2009; Piotrowski, 2011; Ulrich et al., 2008). “Just as medicine has increasingly moved toward *evidence-based medicine* where clinical choices are informed by research, healthcare design is increasingly guided by rigorous research linking

hospitals' physical environments to healthcare outcomes, and it is moving toward evidence-based design (EBD)(Hamilton, 2003)” (Ulrich et al., p. 2, 2008).

In the white paper *A Review of the Research Literature on Evidence-Based Healthcare Design* Ulrich et al. reviewed empirical research studies focused on the impacts of the physical environment on the health and welfare of both patients and professional who use healthcare facilities. Three questions are explored:

1. What can rigorous research tell us about “good” and “bad” hospital design?
2. Can improved design make hospitals less risky and stressful and promote more healing for patients, their families, and staff?
3. Is there scientifically credible evidence that design affects clinical outcomes and staff effectiveness in delivering care?

As shown in Table 2.1, the EBD strategies or environmental interventions had a significant impact on the healthcare outcomes. The use of one design strategy had the potential to completely alter the effectiveness of the hospital and health of the patients being treated (Ulrich et al., 2008). Research provided in a format similar to this white paper has the potential to be read by those responsible for the development and design of healthcare buildings and interiors. Ulrich et al. summarized the result of the review in the following statement, “It is clear from this review that there is a growing amount of sound research to support the application of certain specific design characteristics to improve healthcare outcomes” (p. 57).

EBD is not limited to the healthcare design industry. As news of the effectiveness of EBD spreads other industries are beginning to seek out informed design solutions.

Healthcare Outcomes \ Design Strategies or Environmental Interventions	Single-bed rooms	Access to daylight	Appropriate lighting	Views of nature	Family zone in patient rooms	Carpeting	Noise-reducing finishes	Ceiling lifts	Nursing floor layout	Decentralized supplies	A cuity-adaptable rooms
Reduced hospital-acquired infections	**										*
Reduced medical errors	*		*				*				*
Reduced patient falls	*		*		*	*			*		*
Reduced pain		*	*	**			*				
Improved patient sleep	**	*	*				*				
Reduced patient stress	*	*	*	**	*		**				
Reduced depression		**	**	*	*						
Reduced length of stay		*	*	*							*
Improved patient privacy and confidentiality	**				*		*				
Improved communication with patients & family members	**				*		*				
Improved social support	*				*	*					
Increased patient satisfaction	**	*	*	*	*	*	*				
Decreased staff injuries								**			*
Decreased staff stress	*	*	*	*			*				
Increased staff effectiveness	*		*				*		*	*	*
Increased staff satisfaction	*	*	*	*			*				

* Indicates that a relationship between the specific design factor and healthcare outcome was indicated, directly or indirectly, by empirical studies reviewed in this report.

** Indicates that there is especially strong evidence (converging findings from multiple rigorous studies) indicating that a design intervention improves a healthcare outcome.

Table 2.1: Summary of the Relationships between Design Factors and Healthcare Outcomes. Source: *A Review of the Research Literature on Evidence-Based Healthcare Design* (p. 53), by P. Ulrich, R. S., Zimring, C., Zhu, X., DuBose, J., Seo, H.-B., Choi, Y.-S., . . . Joseph, A., 2008, Concord: The Georgia Tech College of Architecture, The Center for Health Design.

According to Nussbaumer (2009) “A design solution is only as good as the quality of its research. Identifying what is relevant to a particular design project and understanding how to research it are therefore essential”(p. 4).

In the book *Evidence-Based Design for Interior Designers* Nussbaumer provided insight and information to stimulate research activities with the design process (Nussbaumer, 2009). The information provided by Nussbaumer included information on data collection for commercial and residential design (Nussbaumer, 2009). Each chapter focused on a different interior design specialty, i.e. office design and hospitality design, signifying the potential for practitioners working in specialty fields to engage in research (Nussbaumer, 2009). Nussbaumer's (2009) detailed explanation of sources used as evidence in interior design projects is an effective means for explaining the difference between various sources and research utilized for acquiring information to designers seeking this information. Educating professional interior designers about the various types of research and why some sources might be considered more reliable than others, contributes to making professionals better consumers of research.

As shown in tables 2.2a and 2.2b Nussbaumer (2009) lists programming categories and categorizes research into two distinctive categories *Fact Finding* and *Research Literature for Evidence to Inform the Design* indicating the types of information used and how this information might be categorized assists the professional interior designer with knowing how to distinguish between the two categories of information. Tables 2.2a and 2.2b demonstrate how research is utilized within various programming categories helping professionals learn effective ways to incorporate research into programming categories (Nussbaumer, 2009). Interior designers must gain an understanding of how research can be imbedded into the design process and design projects in order for them to continue or

Evidence-Based Design (Research with Programming)			
No.	Programming Categories	Fact Finding	Research Literature for Evidence to Inform the Design
1.	User needs and characteristics	Collect organizational profiles, communication modes, and information about individual user and their needs. Conduct an FF&E inventory.	How will these affect the design (layout-spatial relationships and organization)? Consider present function adjacencies.
2.	Structural and contextual needs	Conduct a site visit and view blueprints. Examine site, structural and contextual needs. Conduct code search	Examine the literature for similar sites and issues or problems. Is there new evidence to support new ways the site and structure, and/or systems may affect the design? Is there new evidence regarding code affecting the design?
3.	Sustainability needs	Examine environmental concerns such as site, orientation, sustainability, and indoor air quality.	Research literature for new evidence for ideas or solutions regarding all aspects of socially responsible design. Research literature for ways that other designers have applied such environmental concerns to the design. Research studies conducted on indoor air quality.
4.	Human Factors	Consider the use of LEED to the project. Determine the physiological, anthropometrics, ergonomics, psychological, and sociological needs. Determine the physiological needs. Determine the psychological needs. Determine the ergonomics concerns. Determine the sociological needs. Apply universal design.	Investigate how the results of other LEED projects affected the overall design. Research literature for new ideas or solutions related to human factors. Research studies related to health concerns. Research studies related to satisfaction. Research a specific client base to ergonomics. Research socioeconomic group and a specific type of design. Research literature for ways other designers have created universal design or how it has affected similar designs.

Table 2.2a: Evidence-Based Design (Research within Programming). Source: *Evidence-Based Design for Interior Designer*, (p. 11) by Nussbaumer, L.L. (2009). New York: Fairchild Books.

Evidence-Based Design (Research with Programming) (<i>continued</i>)			
No.	Programming Categories	Fact Finding	Research Literature for Evidence to Inform the Design
5.	Economic needs	Budget and estimate costs.	Research a design type related to economic issues other designers have experienced (productivity, safety, etc.).
		Conduct a life-cycle cost analysis.	Research literature for ways that life-cycle costing can positively affect budget.
6.	Functional needs	Determine function(s) of spaces, number of people to occupy spaces, investigate space requirements per person.	Research literature for new ways to create better functioning spaces.
7.	Appropriate FF&E	Use existing and/or purchase new FF&E.	Research literature for ways that other designers have used existing pieces in new and different ways.
8.	Specific design types	Determine areas of concern.	Research literature for findings applicable to the design type.
9.	Diversity aspects of design	Investigate various diverse design philosophies and their application to the design.	Investigate how a diverse population can be accommodated within a space by the application of a different philosophy.
10.	Precedents in historical design	Examine the literature on past projects (historical design) related to the type of architecture and design.	Research literature for ways other designers applied architecture and past designs into a project.
11.	Develop program requirements	Using data gathered from client, site, research, and so on, program requirements are developed into a program document.	
12.	Use of design theory to analyze and provide feedback	Using design theory such as Gestalt, interior ecosystems theory, or others, the program can be analyzed for its importance and value. These will offer immediate feedback about decisions that may affect the entire project.	

Table 2.2b: Evidence-Based Design (Research within Programming) (*Continued*).
Source: *Evidence-Based Design for Interior Designer*, (p. 11) by Nussbaumer, L.L. (2009). New York: Fairchild Books.

partake in evidence-based design. Robinson and Parman (2010) in the book *Research-Inspired Design: A Step-by-Step Guide for Interior Designers* reiterated the importance of distinguishing between research that will prove to be beneficial to a project, “To embrace the philosophy of research-based design, the designer must also embrace the method of research that provides all the insight, information, and facts needed to make

the complex problem-solving decisions required in successful interior design” (p. 5).

Every project an interior designer works on requires the consideration of the unique attributes of the project; the type of research utilized for a project must reflect the special needs of each project and user of the space.

Hamilton and Watkins (2009) indicated a variety of specialty design areas that would benefit from the incorporation of EBD in their book titled *Evidence –Based Design for Multiple Building Types*. Hamilton and Watkins (2009) defined 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). Nussbaumer (2009) defined EBD as “the approach that designers take to attain the highest quality of research that leads them to the best possible design solutions” (p. 4) Both definitions provide insight into the notion that clients are more engaged in the design process and expect the professionals they hire to be just as engaged in the project (Hamilton & Watkins, 2009; Nussbaumer, 2009; Piotrowski 2011).

The National Council for Interior Design Qualification (2012) provided the following definition for interior design:

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. These services may include any or all of the following tasks:

- Research and analysis of the client's goals and requirements; and development of documents, drawings and diagrams that outline those needs
- Formulation of preliminary space plans and two and three dimensional design concept studies and sketches that integrate the client's program needs and are based on knowledge of the principles of interior design and theories of human behavior
- Confirmation that preliminary space plans and design concepts are safe, functional, aesthetically appropriate, and meet all public health, safety and welfare requirements, including code, accessibility, environmental, and sustainability guidelines
- Selection of colors, materials and finishes to appropriately convey the design concept and to meet socio-psychological, functional, maintenance, lifecycle performance, environmental, and safety requirements
- Selection and specification of furniture, fixtures, equipment and millwork, including layout drawings and detailed product description; and provision of contract documentation to facilitate pricing, procurement and installation of furniture
- Provision of project management services, including preparation of project budgets and schedules

- Preparation of construction documents, consisting of plans, elevations, details and specifications, to illustrate non-structural and/or non-seismic partition layouts; power and communications locations; reflected ceiling plans and lighting designs; materials and finishes; and furniture layouts
- Preparation of construction documents to adhere to regional building and fire codes, municipal codes, and any other jurisdictional statutes, regulations and guidelines applicable to the interior space
- Coordination and collaboration with other allied design professionals who may be retained to provide consulting services, including but not limited to architects; structural, mechanical and electrical engineers, and various specialty consultants
- Confirmation that construction documents for non-structural and/or non-seismic construction are signed and sealed by the responsible interior designer, as applicable to jurisdictional requirements for filing with code enforcement officials
- Administration of contract documents, bids and negotiations as the client's agent
- Observation and reporting on the implementation of projects while in progress and upon completion, as a representative of and on behalf of the client; and conducting post-occupancy evaluation reports.

Interior designers who have passed the National Council for Interior Design Qualification (NCIDQ) exam acknowledge their responsibilities as a professional interior designer to

be concerned for the *health, safety and welfare* of their clients (National Council for Interior Design Qualification, 2012). A complete disregard of existing research or of conducting research may result in an interior designer not utilizing the healthiest or safest options for their clients and in turn not meeting their professional obligation.

Teaching the Value of Research to Future Interior Designers

Incorporating a research methods course into an existing interior design curriculum would teach future interior designers about types of research. Learning how to incorporate the research during the development of an interior design project may increase the potential that students will incorporate research (Martin, 2010). This ability is nurtured when an interior design project requires the infusion of research into the design process (Martin, 2010). Groat and Wang (2002) explored ways in which different types of research strategies can be used to “inform the design process” (p. 118). “The problem with pre- and post-data collection is obviously that the episodes of research are limited to the introduction and the epilogue. The ‘middle zone,’ that is, the design process itself, is left unaddressed.” (p. 111).

Groat and Wang (2002) described a research model that directly correlates with the design process. “Action Research” is based on Kurt Lewin’s concept of field theory, “theoretical knowledge and practical knowledge must inform each other in a concrete context for the establishment of a true domain (field) of endeavor.” (p.111) This notion of theoretical and practical knowledge influencing one another harkens to the many factors and influences that may alter a design solution during the various phases of the

design process. Groat and Wang (2002) described another version of action research, “design-decision research” which was originally suggested by Jay Farbstein and Min Kantrowitz. “Design-decision research embeds the researcher into the actual process; indeed, the authors underline the point that the ‘researchers’ in their model can themselves be players in the process. In this sense ‘researchers’ and ‘designers’ are ‘one community’ not two...” (p. 113). The concept of merging “researchers” and “designers” seems to be a natural fit as interior designers working on a project would want to seek out the best design solution for their clients by being a “ ‘New practitioner’ who not only makes decisions, but also assesses those decisions from the perspective of research” (p. 113).

Whitemeyer (2010) explored the advancement of EBD in a variety of areas within the interior design profession in the article *The Future of Evidence-Based Design: It's Not Just for Healthcare Anymore*. Whitemeyer (2010) explained that the combination of evidence-based medicine and the legal implications of design decisions contributed greatly to the increasing use of EBD in healthcare design. Examples of how evidence-based design has expanded into other specialty interior design fields including office and educational design shows the successful implementation of EBD in office and educational facilities (Whitmeyer, 2010). The successful implementation of EBD coupled with quality research being conducted and made available to designers for no cost by larger architecture and/or engineering firms and material and furnishing manufacturers conducting research, puts research in the hands of designers and affords designers the opportunity to be a “new practitioner” (Whitemeyer, 2010).

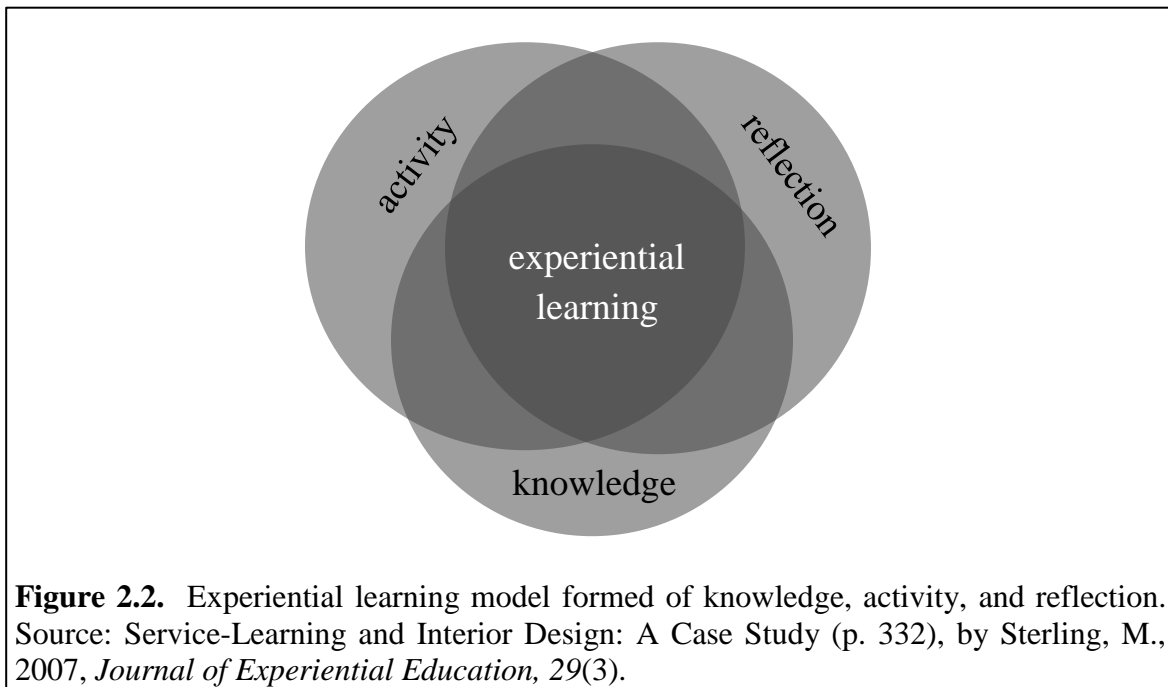
In the article *Trending Research*, Whitemeyer (2011) described a change in the expectations of clients and how this change in expectation has led to designers using research to develop more informed design solutions (2011). Whitemeyer (2011) discussed how current interior design firms are utilizing research methods to collect data at various points of the design process (p. 30-31). Beyond providing design solutions supported by research Whitemeyer (2011) explained how some agencies use research as a catalyst for change, “As research-based design takes greater hold in the interior design and architecture industry, it will eventually become an expected part of the service, perhaps even mandated by public agencies.” (p. 32).

Martin and Guerin (2006) in the descriptive paper *Using Research to Inform Design Solutions*, provided an overview of the research process and information explaining where to locate research, an overview of different research strategies, and an explanation of how to use research within the design process. Incorporating research into the design process has the potential to allow for more informed design decisions and solutions (Zbrowsky, 2010; Martin, 2010). Student’s equipped to utilize and conduct research are not only prepared to meet the needs of a client, but they are capable of contributing to the definition of the interior design profession (Zbrowsky, 2010; Martin, 2010).

Experiential learning.

Experiential learning and service-learning are two models for learning that incorporate real life experiences with learning. In the book *Experiential learning: Experience as the source of learning and development*, Kolb (1984) defined learning as “the process

whereby knowledge is created through the transformation of experience” (p. 38). Kolb’s definition of learning defines learning as more than the mere transferring of information. Learning is instead described as a process where knowledge is not stagnant and simply exchanged; it is ever evolving in relation to our own experiences, making it both subjective and objective (Kolb, 1984). “The Institute for Experiential Learning (IEL) states that experiential learning is composed of three elements: knowledge, activity, and reflection (see Figure 2.2) and that it involves students as active and intentional learners (Washington Internship Institute [WII]” (Sterling, 2007). Figure 2 shows how each



element overlaps and contributes equally to experiential learning. Interior Design studio projects that encourage student engagement can take many forms, and interior design students who are introduced to various types of experiences have the potential to make deeper connections to the information they are acquiring (Zollinger et al., 2009).

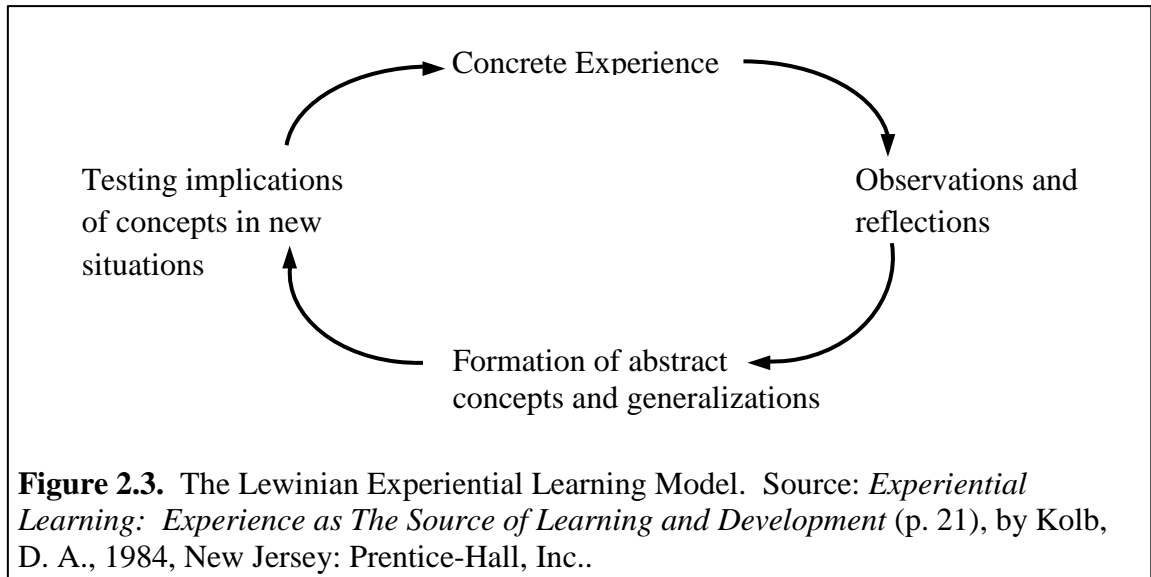
Kolb (1984) explained the differences in experiential learning processes and the connection between three different experiential learning theories developed by John Dewey, Kurt Lewin, and Jean Piaget. Kolb (1984) noted:

This perspective on learning is called “experiential” for two reasons. The first is to tie it clearly to its intellectual origins in the work of Dewey, Lewin, and Piaget. The second reason is to emphasize the central role that experience plays in the learning process. This differentiates experiential learning theory from rationalist and other cognitive theories of learning that tend to give primary emphasis to acquisition, manipulation, and recall of abstract symbols, and from behavioral learning theories that deny any role for consciousness and subjective experience in the learning process (p.20).

The intent for connecting the three models of the experiential learning process was “to suggest through experiential learning theory a holistic integrative perspective on learning that combines experience, perception, cognition, and behavior.” (Kolb, 1984, p. 21).

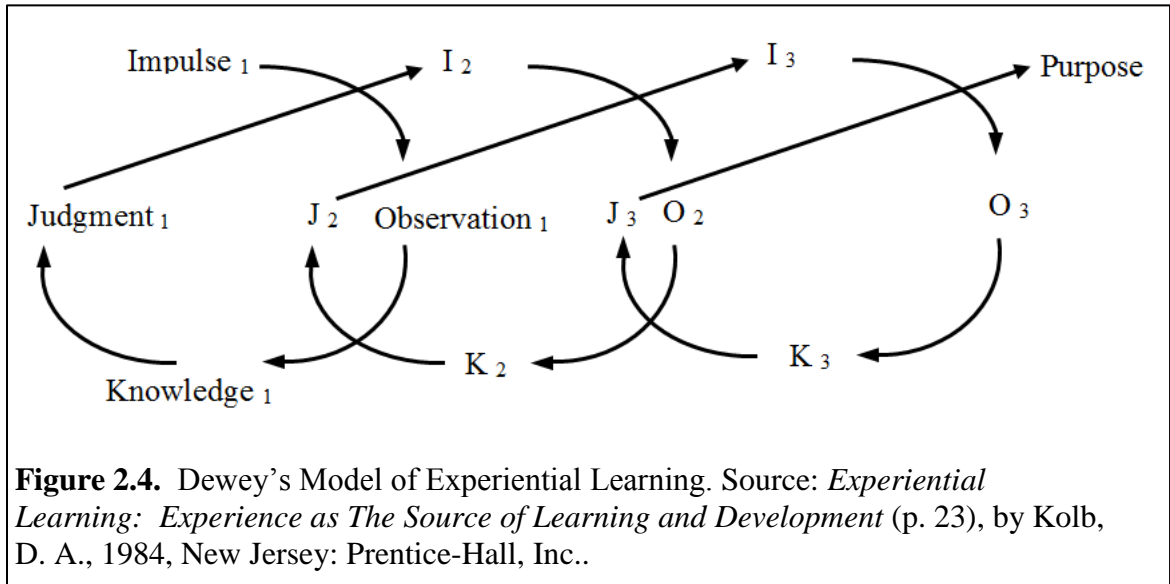
The first model Kolb (1984) mentioned is The Lewinian Model of Action Research and Laboratory which is comprised of a *four-stage cycle* with a primary emphasis on the concrete experience and the collection of data acquired through feedback processes (Kolb, 1984, p. 21). The Lewinian Experiential Learning Model diagram shown in Figure 2.3 demonstrates equivalent weight given to every stage of the model, further emphasizing the importance of treating each stage of the model as equal contributors to the resulting learning experience.

The primary intent of this theory is to integrate action and observation in a manner that results in “...an effective, goal-directed learning process” (Kolb, 1984, p.22).



The second model Kolb (1984) explained Dewey’s Model of Learning. Kolb found Dewey’s Model of Learning to be similar to the Lewinian model with one key difference being Dewey’s emphasis on the “developmental nature of learning” (p. 22). As cited in Kolb (1984), Dewey suggested that the recollection of past events and similar experiences contributes to the formation of purposes in two ways, through the person’s existing knowledge and judgment (p.22). Figure 2.4 graphically depicts Dewey’s Model of Learning and shows the compounding contribution of past experiences and events to the development of purpose (Kolb, 1984, p. 22). Figure 2.4 demonstrates the influence experience has on ideas and indicates that ideas give direction to impulse as opposed to The Lewinian Model of Action Research and Laboratory Training which was only

concerned with the *here-and-now* experience and not the compounding effects of past experiences (Kolb, 1984, p. 21).

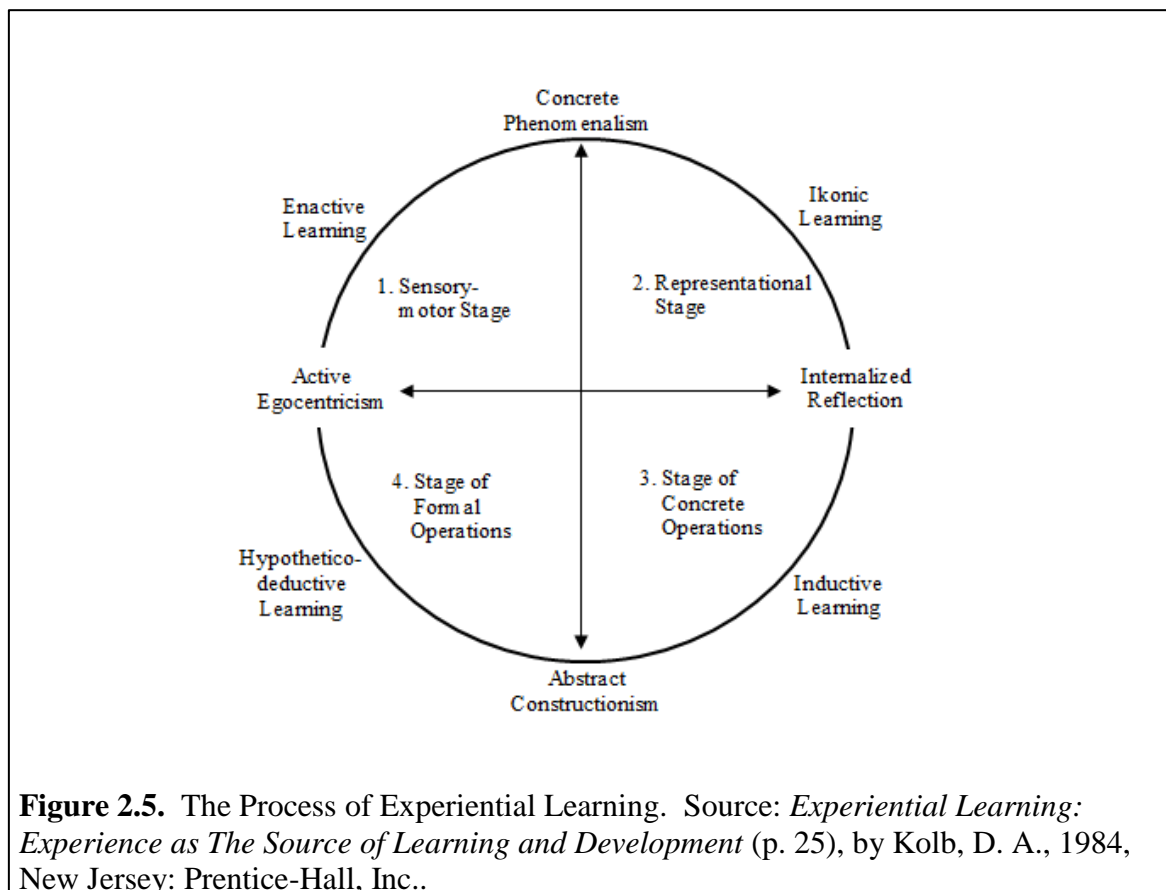


The third and final model of experiential learning discussed by Kolb (1984) was Piaget's Model of Learning and Cognitive Development. Piaget's model connected the process of learning to four stages of cognitive growth and development: 0-2 years, 2-6 years, 7-11 years, 12-15 years.

In Piaget's terms, the key to learning lies in the mutual interaction of the process of accommodation of concepts or schemas to experiences in the world and the process of assimilation of events and experiences from the world into existing concepts or schemas. Learning or, in Piaget's term, intelligent adaptation results from a balanced tension between these two processes (Kolb, 1984, p. 23).

Piaget's work incorporated another layer of influences that dictated how one learns and how experiences affect learning (Kolb, 1984). The stage of cognitive development a

person is at in their life can influence how an experience is recalled or used to make future decisions (Kolb, 1984). Figure 2.5 shows how each of the stages in cognitive development contributes to what Kolb (1984) referred to as the “basic learning process of adults” (p. 25).



Kolb (1984) recognized learning to not defined by a single experiential learning theory and proposed that when one considered the works of Dewey, Lewin, and Piaget together, they “form a unique perspective on learning and development” (p.26). Kolb (1984)

identified seven characteristics shared by the three models of experiential learning discussed previously:

1. Learning is best conceived as a process, whereby concepts are derived from and continuously modified by experience
2. Learning is a continuous process grounded in experience
3. Learning is best conceived as a process, not in terms of outcomes, as learning occurs between expectation and experience
4. The process of learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world
5. Learning is an holistic process of adaptation to the world
6. Learning involves transactions between the person and the environment
7. Learning is the process of creating knowledge (p. 26-38)

These characteristics exemplify the importance of experiences to the learning process and development of a person's knowledge. Kolb (1984) summarized by stating that learning is not a simple moment in time upon which information is transferred, but instead learning is comprised of a series of events influencing future decisions and the acquisition of a person's knowledge (p. 38).

Nussbaumer (2001) discussed learning styles in connection to interior design instruction in the article *Theoretical Framework for Instruction that Accommodates All Learning Styles*. "Instruction in interior design, a multidisciplinary field with a variety of learning styles and various visual abilities, should accommodate this diversity to improve learning

outcomes, attitudes toward learning, and visual abilities” (Nussbaumer, 2001, p. 35).

Incorporating a variety of teaching strategies has the potential to engage interior design students in the learning process and challenge them to learn in different ways through different methods of teaching (Nussbaumer, 2001, p. 35). The purpose of this article was to present and apply a theoretical framework for instruction to a particular topic discussed in an interior design lecture (Nussbaumer, 2001, p. 35). Nussbaumer (2001) discussed the need to consider previous research conducted about learning styles in relation to various professions (p.35). As noted by Kolb cited by Nussbaumer (2001) “different learning styles are found within professions that are multidisciplinary and require a variety of skills” (p. 39). Nussbaumer (2001) explained that interior designers tend to have a combination of left-brain abstract thinking and right-brain concrete thinking due to the mixture of skills needed to be an interior designer (p. 39). A reference to previous work conducted by Nussbaumer and Guerin (2000) to determine the learning styles of interior design students, “...all learning styles have been found among interior design students” (p.35) supports the need to incorporate a variety of teaching strategies to accommodate a diverse mix of learning styles within an interior design classroom (Nussbaumer, 2000).

Service-learning.

Engaging students in the process of learning has been the primary reason to utilize alternative teaching strategies that fall into the category of experiential learning. One particular form of experiential learning, service-learning, takes the engagement of the student a step further by challenging students to partake in an activity that has an impact

on the community where they live. Bringle and Hatcher (1996) defined service-learning as “a credit bearing educational experience in which students participate in an organized service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility” (p. 222).

In an attempt to gain credence for using service-learning projects as an effective means of learning, Bowen (2010) conducted a qualitative content analysis of journal articles reporting service-learning being utilized in the classroom. Bowen (2010) used three objectives to determine the journals selected for review. Journal articles: (1) were authored by teacher –scholars, (2) reported research about service learning as a teaching and learning strategy, (3) included faculty reflections or comments on teaching and learning in accordance with the scholarship of teaching and learning principles (Bowen, 2010, p. 3).

The coding of information within the journal articles selected by Bowen (2010) revealed several further categorized into four central themes: (1) real-world application, (2) collaboration and interaction, (3) meaning making through reflection, and (4) enhancement of course content (Bowen, 2010, p. 5). The first theme Bowen (2010) discusses is *real-world application* (p. 5-6). Bowen (2010) found several articles discussing how students became more engaged in the learning process through the application of what was learned in the classroom (p. 5). Students also showed a greater sense of civic duty through the process of leaving campus and going into the community

(Bowen, 2010, p. 5). Bowen (2010) indicated “...that the practical experience at service sites facilitated ethical decision making and promoted civic engagement, preparing students to ‘make a difference’ in the community” (p. 6). The second theme mentioned, *collaboration and interaction*, was found to be an unexpected outcome of the research study (Bowen, 2010, p.7). Students were able to work as a team with the community members or classmates to execute various tasks and through that opportunity, students were able to demonstrate what they know to the community and their peers and they were able to see the power of working as a team to accomplish an otherwise daunting task (Bowen, 2010, p.7). The third theme, *meaning making through reflection*, indicated the importance of incorporating reflection activities to assist students with making the connection between the work conducted in class and the work being conducted in the community (Bowen, 2010, p. 7). The final theme discussed is *enhancement of course content*, “Service-learning projects enhanced course content by extending student learning beyond the classroom and into the community while bridging the theory-practice divide” (Bowen, 2010, p.8). This particular theme demonstrated one of the strongest reasons for educators to incorporate service-learning into their courses, to connect what is learned in the classroom with real world problems.

Bowen et al. (2011) in the article *Listening to the Voices of Today’s Undergraduates: Implications of Teaching and Learning* considered the student perception of learning to determine the current generation of students’, referred to as “Millennials”, perception of *active and integrative learning*. Bowen et al. (2011) utilized the works of Howe and

Stauss (2000, 2003) to define the *Millennials*. As noted by Howe and Stauss (2000, 2003) and cited in Bowen et al. (2011)

... the new generational cohort displays positive social habits, such as a focus on teamwork, achievement, civic-spiritedness, and good conduct. Unlike their predecessors, Millennials are not self-absorbed, distrustful pessimists and rule-breakers. Rather they are optimistic, high-achieving rule-followers, who rely on structure in their daily lives (Howe & Strauss, 2000, 2003; see also DeBard, 2004) (p. 22).

Since generational characteristics are considered to be more generalized it is important to understand how this information could be used by an educator. Understanding the characteristics of the generation of students one is teaching, affords an educator an opportunity to adapt the delivery of the course material to coincide with the learning style of the students (Bowen et al., 2011, p. 22). Bowen et al. (2011) defined active learning as “any instructional method that engages students in the learning process” and consider service-learning to fall into the category of *active learning* (p. 22).

Bowen et al. (2011) conducted a qualitative research study designed to explore how students characterize their active learning experience(s). Utilizing focus groups with the intent to obtain information about the group as a whole, contributed to the explorative nature of the study and the acquisition of a more collective perspective (Bowen et al., 2011, p. 24). Six focus groups comprised of three to eight members each were formulated and each focus group met for approximately 60 minutes to discuss questions,

referred to as “prompts”, provided to them by the moderator (Bowen et al., 2011, p. 24).

The same moderator was used for all six focus groups “to control for the influence of the moderator” (Bowen et al., 2011, p. 24). According to Bowen et al. (2011) five thematic categories materialized from the coding process utilized during the qualitative analysis of the data: (1) Involvement in co-curricular activities, (2) Preference for experiential learning, (3) Seeking support from peers, (4) Valuing faculty-student interaction, and (5) Learning and taking responsibility (p. 26).

The findings of the Bowen et al. (2011) research study was that students preferred active learning opportunities including, but not limited to, community service. Although some evidence did not support all of the characteristics of the Millennial generation previously described by Howe and Strauss (2000, 2003), this one particular interest in community service aligns well with the Millennial trait of civic-mindedness. Bowen et al. (2011) specified five implications of teaching and learning:

1. Curricula should include clear, interrelated goals for courses, academic programs, and student learning.
2. Pedagogical practices should promote opportunities for meaningful collaboration between students and with other stakeholders such as faculty, staff, and community members.
3. Providing and creating knowledge should be complemented by opportunities for students to apply that knowledge.
4. The teaching process should encourage students to relate academic material to their lives outside the classroom through critical reflection.

5. The teaching process also should engage students in higher-order thinking tasks that will prepare them for workplace and societal challenges.

It is apparent from the results of the Bowen et al. (2011) research study that current students are less interested in passive or traditional means of acquiring knowledge, instead they prefer to not only be engaged in the process of learning, but engaged in the communities where they live and learn (p. 31).

Studio courses provide students in architecture and landscape architecture with the course structure needed for students to apply their knowledge acquired in lecture-based courses to projects that are similar to those completed in practice, making service-learning projects a “natural fit” (Forsyth, Lu, & McGirr, n.d.). Two urban design studios are used as case studies in the Forsyth, Lu, and McGirr (n.d.) paper titled *Inside the Service Learning Studio in Urban Design*. The intent for the paper was to explore the structure, effectiveness, and results of two studio courses in urban design incorporating a service-learning project into the curriculum (Forsyth, Lu, & McGirr, n.d.). The primary focus of the inquiry was to determine if service learning projects are an effective way to help students gain real-life experience working with community members that may have a very different background than their own (Forsyth, Lu, & McGirr, n.d., 166-167).

Results indicated some logistical issues with the way the project was structured, however specific results focused on the service-learning elements of the course and indicated that students learned how to communicate with professionals and residents within the community where the project took place (Forsyth, Lu, & McGirr, n.d., 174). The success

of service-learning projects in architecture and landscape architecture studios eludes to the potential success of service-learning projects in interior design studios.

Zollinger et al. (2009) in the article *Deconstructing Service-Learning: A Framework for Interior Design* indicated a need to better understand how service-learning can be used in interior design curriculum to strengthen students ability to think critically and problem solve.

“Although many studies have elaborated on the benefits of service learning, little direction is given as to what needs to be considered in approaching an interior design service-learning project and how best to relate these experiences to the profession’s goal of protecting the public’s health, safety, and welfare.” (Zollinger et al, 2009, p.32)

Zollinger et al. (2009) began their literature review by defining service learning and distinguishing service-learning from traditional community service. As noted by Abregana (2006) and cited in Zollinger et al. (2009) differences between service-learning and traditional forms of service like community service or volunteering are primarily focused on balancing the learning with the service and integrating members in the community and students (p. 33). Understanding the differences between these forms of service is vital to distinguishing what characteristics of a particular project are required for a project to be considered a service-learning project (Zollinger et al., 2009).

Zollinger et al. (2009) defined and discussed the following six models originally described by Heffernan (2001) for integrating service learning into a curriculum:

1. “Pure” Service-learning (p. 34)
2. Discipline-Based Service-Learning Courses (p. 34)
3. Problem-Based Service–Learning Courses (p. 34)
4. Capstone Course (p. 35)
5. Service Internship (p. 35)
6. Community-Based Action Research (p. 35)

Zollinger et al. (2009) found the models to “...be applicable to interior design education” but indicated that it remains unclear how a faculty member might determine if a service-learning project is appropriate in the interior design course they are teaching (p. 35).

With the intent to inform future efforts to integrate service-learning in an interior design curriculum, three case studies were analyzed based on four criteria selected by the interior design faculty at the University of Minnesota that “must be embodied by service-learning projects” (p. 35). The result of the research study was a “framework comprised of criteria” (Zollinger et al., p. 44, 2009) that could potential be used by faculty considering implementation of a service-learning project. Table 2.3 provides faculty with the rationale behind including the criteria within the framework for interior design.

Understanding the rationale behind each criterion assists faculty with understanding when and if the project they are considering is a good choice for a service-learning project.

Zollinger et al. (2009) acknowledged the challenges and complexities involved with designing a service-learning project and clearly challenged faculty to take on service-learning projects to further expand the BOK focused on service-learning. The resulting framework created by Zollinger et al. (2009) provides interior design educators with the ability to distinguish between projects that will provide the holistic experience needed to be considered an enriching learning experience. By educating faculty considering

Criteria	Rationale for inclusion
Relate to course objectives	This criterion is part of the definition of service-learning and what distinguishes it from volunteerism. Therefore, service-learning projects must contribute to the learning objectives of the specific design course in which they are undertaken
Apply course knowledge	Service-learning experiences must have an application element, one that takes students' knowledge and translates it into solutions for a real-life design problem
Connect to the community	Both the definition of service-learning and the university's mission link scholarly expertise to community work. Service-learning pedagogies must thereby encompass collaboration with community organizations and institutions
Reflect on learning	This criterion ensures that students emphasize reflective practice and mutual learning and recognize they learn as well as contribute design solutions to community clients. Lessons are drawn from this experience that can be carried over to the next course

Table 2.3. Service-learning framework for interior design education. Source: Deconstructing Service-Learning: A Framework for Interior Design (p. 36), by Zollinger, S. W., Guerin, D. A., Hadjiyanni, T. & Martin, C. S., 2009, *Journal of Interior Design*, 34(3).

service-learning projects about what to expect or be aware of when taking on a service-learning project, problems can be avoided and the overall experience can be enhanced (Zollinger et al., 2009).

Sterling (2007) discussed the challenges of service-learning in interior design education through the analysis of two studio projects in the article *Service-Learning and Interior Design: A Case Study*. Sterling (2007) explored how each project fulfilled the Institute for Experiential Learning's Three Elements of Experiential Learning, see Figure 2.2. Sterling (2007) concluded that the projects met the curriculum and university needs while also "achieving many of the must and should indicators described by the Council for Interior Design Accreditation in its accreditation manual (2006)" (p. 341). Experiential learning and service-learning have been proven to be challenging to implement in an interior design studio curriculum, however their life-long benefits make the additional efforts well worth it (Zollinger et al., 2009; Sterling, 2007). "One thing remains certain though: Service-learning is an indisputable aspect of an excellent interior design education" (Zollinger et al., p. 44, 2009).

Service-learning interior design studio projects have been discussed as case studies in literature for some time (Flannery, 1993, Pable, 2007; Read & Stadler, 2002; Zollinger et al., 2009). Case studies focused on service-learning interior design studio projects have contributed to the service-learning body of knowledge and act as models of service-learning projects being used in interior design curricula (Flannery, 1993; Pable, 2007; Read & Stadler, 2002; Zollinger et al., 2009). These models provide insight into the benefits, challenges, project structure, management, execution and evaluation of service-learning projects that can be referred to when an interior design educator is considering incorporating a service-learning project into their curriculum.

A primary reason for incorporating a service learning project into a studio course is to emulate the experiences of a professional interior designer (Flannery, 1993; Pable, 2007; Read & Stadler, 2002; Zollinger et al., 2009). Service-learning projects include the participation of members within the community who serve as clients to the students involved in the project (Flannery, 1993; Pable, 2007; Read & Stadler, 2002; Zollinger et al., 2009). The introduction of clients to an interior design studio course presents design problems that are imperfect with the potential to change as the client's needs or priorities change, resulting in a more true-to-life experience (Flannery, 1993; Pable, 2007; Read & Stadler, 2002; Zollinger et al., 2009).

A second reason for incorporating a service-learning project into a curriculum is to connect students to communities with the intention being to cultivate civic-minded professionals (Eyler, 2002; Fenzel & Peyrot, 2005; Moely, Furco, & Reed, 2008; Newman & Hernandez, 2011; Parker-Gwin & Mabry, 1998; Zollinger et al., 2009). To be considered a professional one must not only be committed to their profession, but they must be committed to the society that supports the profession's autonomy (Anderson, Honey, & Dudek, 2007). The outcomes of service-learning are directly related to the structure of the course or project (Eyler & Giles, 1999; Ikeda, 2000; Mabry, 1998; Parker-Gwin & Mabry, 1998). "In a highly reflective service-learning class some students will go beyond more elaborate understanding of the issues, to transformation of the way they think about society." (Eyler, p. 527, 2002). Reflection is a necessary component of service-learning courses or projects as it provides a means for students to connect the service to civic and social issues (Eyler & Giles, 1999; Ikeda, 2000; Mabry,

1998; Parker-Gwin & Mabry, 1998). “Experiential learning through service can enable students to move beyond individualistic explanations of social phenomena” (Mabry, p. 289, 1998).

In the article *Service Learning as Pedagogy and Civic Education: Comparing Outcomes for Three Models* Parker-Gwin & Mabry (1998) discussed three models of service-learning, two placement models and a consulting model (p. 278). The two placement models either allowed the student to select the site they are to serve or they were assigned a site (Parker-Gwin & Mabry, p. 278, 1998). The consulting model engaged the entire class in a project at one site (Parker-Gwin & Mabry, p. 278, 1998). Parker-Gwin & Mabry (1998) suggested that instructors not focus on institutionalizing service-learning, instead they suggested creating solid relationships with the service sites and develop curricula “that take students beyond merely identifying with those they serve, but identifying the causes that result in the need for their service” (p. 289). Quality service-learning experiences positively influence students involvement in future service-learning opportunities or community service opportunities once the student graduates (Astin, Sax, & Avalos, 1999, Eyler, 2002; Eyler, Giles, Stenson, & Gray, 2001, Fensel & Leary, 1997; Giles & Eyler, 1994; Ikeda, 2000; Myers-Lipton, 1998). “Working in the community, getting to know people actually struggling with important needs and issues, makes those issues real to student and important to resolve” (Eyler, p. 525, 2002).

Pable (2010) challenged interior design practitioners to “engage in social issues as interior designers” and provides various reasons to participate and methods for

incorporating “socially beneficial design” into their work (p. 10). Pable (2010) reminded interior design practitioners of their social responsibility by challenging interior design organizations to “raise the prominence of social responsibility by placing it within its code of ethics” (p. 13) and educators to “instill change through education” (p. 14).

Professionalism carries with it many responsibilities, one of which is “the social compact to do good” (Anderson, Honey, & Dudek, 2007). In the article *Interior Design’s Social Compact: Key to the Quest for Professional Status*, Anderson, Honey, & Dudek (2007) argued the need for interior design practitioners to not only define their BOK, but define their “ethical obligation to society” (p.viii). A profession is not solely defined by its unique BOK, formal education, or regulation, it is also defined by its contribution to the community that supports the work of the profession (Anderson, Honey, & Dudek, p. viii, 2007). Anderson, Honey, & Dudek (2007) believed the uniqueness of the interior design profession lies in “the profession’s social compact” and challenged interior design educators to:

...redefine the profession’s role in society by educating new interior designers to understand and value the profession’s obligation to providing a unique and meaningful service to society, one that contributes to interdependence and thus has value beyond the economic welfare of the practitioner and client (p. xi).

The combination of real-life experience and an increased sense of civic-duty provide make service-learning a multi-faceted experience with lasting results.

Educating future interior designers about research and professionalization.

Clemens & Eckman (2011) study *Exploring Theories Identified in the Journal of Interior Design* was a qualitative study conducted to review the various theories written about in the Journal of Interior Design. The purpose of this study was to focus on the “extent to which theory is being used, borrowed, and applied to interior design” and to ascertain “the place and presence of theory in the interior design body of knowledge” (p. 32).

Within the analysis of the various theories one theory is mentioned in regards to experiential learning, Greenberg’s four constructs of experiential learning (Clemons and Eckman, p. 37, 2011). Within this discussion experiential learning theory is defined as “an application of cognitive/perpetual models, which propose that learning by doing is at the heart of both experiential learning and most interior design curricula” (Clemons and Eckman, p. 37, 2011).

Analyzing the existing BOK for evidence of the development of theories by interior design scholars and professionals is essential to determining if current research is contributing and expanding what is known about the profession or if current research is identifying existing theories and proposing models to test theories (Clemons & Eckman, 2011). The expansion of the interior design BOK is dependent on the development of new knowledge (Birdsong & Lawlor, 2001; Clemons & Eckman, 2011; Dickinson, Anthony & Marsden, 2009; Dickinson, Anthony, Marsden & Read, 2007; Dickson & White, 2009; Guerin & Martin, 2001, 2004, 2010; Martin & Guerin, 2006). In order to expand the interior design BOK, Interior design research needs to include testing existing

theories from other fields that may be applicable to interior design and develop theory that is “specific to interior design”(Clemons & Eckman, p. 45, 2011).

The development of theory is not the sole responsibility of the interior design scholar, “To build our knowledge collectively as a discipline, we need to formalize our approach to research by conducting systematic research” (Zborowsky, p. 137, 2010). Zborowsky (2010) explained the importance of teaching research methods at the undergraduate level, specifically in studio classes. Using research within studio classes and in the creation of an interior design project contributes to student’s independent knowledge of how to incorporate research into projects (Zborowsky, p. 138, 2010). Infusing research into studio courses has the potential to help students recognize the connection of research to the process of professionalization (Zborowsky, 2010; Dickinson, Anthony, Marsden & Read, 2007). The integration of research into the design process opens the door to professional interior designers doing their part to sustain the profession (Zborowsky, p. 142, 2010).

Educator’s perception of research.

Empirical research conducted by Dickinson, Anthony, and Marsden (2009) surveyed interior design faculty (n=565) who were members of the Interior Design Educators Council (IDEC) to determine:

1. Their definitions of research and programming
2. Their perceived value of research in interior design practice and education
3. Their perceptions of who should conduct research

4. The degree to which they are engaging in research
5. How they are incorporating research into the classroom (p. 5)

Dickinson, Anthony, and Marsden (2009) discussed the need for empirical research to be conducted to expand the body of knowledge and to move the field of interior design into profession status (Dickinson, Anthony, & Marsden, 2009). Previous research conducted regarding students and professionals' interpretations of what research is and the process in which research is executed was mentioned and led to Dickinson, Anthony, and Marsden (2009) expressing a need for determining what faculty teaching in interior design programs understand research to be and how to go about using research (Dickinson, Anthony, & Marsden, 2009).

Arguing that without a change in how research is discussed and incorporated into curriculum at the undergraduate level, Dickinson, Anthony, & Marsden (2009) mentioned that there will be yet another generation of interior designers who are unaware of what research is, how it is conducted and most importantly how it is used to further the profession. To clarify the difference between research and programming the authors provided a separate discussion for each of the topics (Dickinson, Anthony, & Marsden, 2009). Within this discussion it was determined that research is "empirical in nature" and is more than "information gathering", while programming "does not move the field forward" and is considered the "systematic search for information" (Dickinson, Anthony, & Marsden, p.3-4, 2009).

The research study conducted unveiled some inconsistencies in the definitions of research and programming (Dickinson, Anthony, & Marsden, 2009). The results of the study found that 80% of the faculty “strongly believed that research findings can provide useful information to interior design practitioners” (Dickinson, Anthony, & Marsden, p.10, 2009). It was also determined that some interior designers use research and others do not (Dickinson, Anthony, & Marsden, p.10, 2009). “What is interesting to note is the skepticism regarding research use in professional practice considering the number of articles written on evidence-based design (Hamilton, 2004)” (Dickinson, Anthony, & Marsden, p.10, 2009). Another contradiction in the results of this research study was faculty believing in the importance of research however they do not allocate the time necessary within their studio courses to teach the process of research (Dickinson, Anthony, & Marsden, 2009).

Dickinson, Anthony, & Marsden (2009) discuss the additional need for the Council for Interior Design Accreditation (CIDA) to incorporate research into the criteria/requirements used to determine whether or not an interior design program is to be accredited by CIDA. It is clear that faculty need to be more aware of the proper definition of the terms *research* and *programming* in order to change the mentality of the next generation of interior designers and help them understand the importance of research to the interior design profession.

Utilizing evidence-based design in interior design studio courses.

Dickinson, Marsden, and Read (2007) conducted a pilot study focused on the exploration of interior design students': (1) perceived value of research in interior design practice; (2) perceptions of who should conduct research; (3) attitudes toward research in interior design education; and (4) definitions of research (Dickinson, Marsden, & Read, p. 2, 2007). Dickinson, Marsden, and Read (2007) discussed the need for undergraduate students in interior design programs to participate in empirical research methods in order to develop an understanding of the value of research in the practice of interior design. The justification used for conducting the pilot study is entrenched in the need for interior design professionals to embrace the notion that "Research is one of the major components in distinguishing a profession (e.g., law, medicine, and engineering) from a trade school vocation (Dickson & White, 1993; Dickson & White, 1995)" (Dickinson, Marsden, & Read, p. 2, 2007). The connection between future interior design professionals and empirical research is vital to the development and advancement of interior design as a profession. "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 (Gibson, 1994)" (Dickinson, Marsden, & Read, p. 2, 2007). The results of this pilot study confirmed student's misconceptions of researching consisting primarily of gathering information, the reliance on soft sources for design information, and a lack of understand who should be conducting research (Dickinson, Marsden, & Read, 2007). Although the results of this study cannot be generalized to include a larger population, the results suggested a need for additional

information on the topic and an improved approach to teaching research methods at an undergraduate level.

The article *Rural University-Community Partnerships: Interior Design and Service-learning* by Read and Stadler (2002) focused on the implementation of research to inform interior design solutions: “The specialization of interior design integrates these foundations in both a theoretical and applied manner (Dohr, 1992; Fowles, 1992; Guerin, 1992) in the educational setting by requiring students to apply design theory to realistic environmental spaces” (p. 54)

The studio project described in the Read and Stadler (2002) article required students to create and administer interviews of staff members working at the rural family service center and record measurements which eventually lead to the creation of a design solution based on user input, programming, and building codes (p. 55). Read and Stadler (2002) noted that “From the reports of interior design students who are seeking employment after graduation, it also appears that employers are valuing these experiences as they select new employees” (p.57).

Martin (2010) addressed this need for students to be “engaged in evidence-based design while in the classroom” by providing methods instructors of undergraduate or graduate students could use in their curriculum (p. 151). The increasing demand for “evidence” or “proof” that a design solution will be an effective solution is a direct result of the current economic shift in spending by those building or renovating spaces (Martin, p. 151, 2010).

Current clients need to invest in designs that have the potential to improve “the bottom line”, “The goal is for the undergraduate student to be prepared to begin using an EBD approach in practice upon graduation” (Martin, p. 151-152, 2010). Introducing undergraduate students to research provides them with a knowledge base of how research can impact a design solution and how to incorporate research into the design process in an effective manner (Martin, p. 155, 2010). Upon graduating, these new interior design practitioners will be capable of influencing the work of existing practitioners by sharing techniques learned for incorporating research into the design process and design solutions (Martin, p.155, 2010).

Summary of Literature

Literature referencing a need for continued development of the interior design BOK is extensive and a lack of empirical research seems to be a reoccurring theme. A variety of studies ranging from quantitative, qualitative, mixed method, case studies, and ethnographic research studies were evaluated and incorporated into this review of literature. A variety of research proved to be valuable to the development of the interior design BOK as it provides greater insight into design related problems. The need for better collaboration between educators and practitioners is evident and has the potential to help broaden the scope of research within the BOK. The current research available to interior designers seemed to be pragmatic in nature and could benefit from the diversity that might come from collaborative efforts of educators and practitioners. A need to continue developing the BOK is essential to the stability of interior design as a profession. In order to continue this expansion of knowledge future interior designers

and current practitioners need to understand the connection between research and professionalization of the interior design profession.

Significance of the Study

Researchers have executed several research studies focusing on the professionalization of the interior design profession. The increasing need for practitioners and faculty in the field of interior design to conduct research to expand the BOK is clearly identified as a means to assist with the regulation of the practice of interior design. Research also called for faculty to incorporate research opportunities within their curricula to ensure a continuation of professionals engaged in the process of research.

Research focused on service-learning projects that have been incorporated into classrooms suggested an increased sense of social responsibility, civic-mindedness, and engagement of the students involved. Case studies focused on EBD demonstrated students' ability to apply as well as conduct research. Yet, little research explained how interior design students become more engaged in the process of research for professional reasons or what types of projects encourage students to become more engaged in the conducting research.

What is needed is a qualitative and quantitative method research study focused on the evidence-based service-learning studio project's ability to engage undergraduate interior design students in the process of research. Providing a combination of quantitative and qualitative questions will allow participants to use their own words to describe their

experiences, which may or may not provide additional insight to understanding the reasons behind the answers selected.

Determining the most effective types of projects to utilize when teaching EBD to interior design students could impact students' perception of the importance of research to the interior design profession.

Chapter III: Research Methodology

This research study utilized a combination of qualitative and quantitative research methods to examine if service-learning projects used to teach EBD are an effective means for teaching the importance of conducting research to future interior designers.

Four research questions use for this study were:

1. Do students connect research to interior design solutions?
2. Are students capable of ascertaining the difference between collecting information and conducting research after working on a service-learning project focused on EBD?
3. Does a service-learning project focused on EBD change interior design students perceptions of an interior designer's responsibilities to the interior design profession?
4. Do interior design students who participate in service-learning projects focused on EBD understand the impact of research on the advancement of interior design as a profession?

Implications

This study potentially could lead to an increase in research exploring specific teaching strategies for teaching the value of conducting research to future interior designers.

Understanding effective teaching strategies could lead to the increased application of these strategies in the classroom. Results of this research study have the potential to influence the curriculum of interior design programs through the introduction of alternative studio projects, i.e. service-learning projects. Accreditation standards utilized by accrediting bodies may also be affected since evidence-based projects promote life-long learning and serve as an excellent means for connecting research related to actual design solutions and future interior designers to more diverse experiences.

Uncovering effective strategies for teaching EBD to future interior designers impacts the interior design profession. As a result students have the potential to evolve into practitioners or faculty with a pre-existing sense of responsibility to contribute to the interior design BOK.

Hypotheses

1. If students participate in service-learning projects that incorporate EBD then they will understand how research is used in the profession.
2. If students participate in a service-learning project focused on EBD procedures then they will understand the difference between gathering information and conducting research.

3. If students participate in a service-learning project focused on EBD procedures then they will develop a deeper commitment to the health, safety and welfare of users of interior spaces.
4. If students participate in a service-learning project focused on EBD procedures then the students will understand the impact research has on the advancement of interior design as a profession.

Approach

After completing the review of literature and considering sources available for the research study, including the availability of potential participants it was determined that the best means for collecting data would be an anonymous questionnaire. Questionnaires are considered an appropriate and effective means for collecting reliable data. Since the principal investigator for this study is also the instructor of the course the participants are currently enrolled, an anonymous questionnaire allowed students to be sincere with their responses without being concerned the instructor will know the answers they provided.

Survey Instrument

The mixed methods questionnaire used for this study consisted of a mixture of open-ended, close-ended and semi-closed-ended questions. The questionnaire was designed to obtain participants' responses regarding their beliefs, practices, opinions, and attitudes about service-learning EBD studio projects, EBD studio projects and the interior design profession.

The final version of the questionnaire was developed by reviewing several existing surveys and adapting appropriate questions to suit the study. The questionnaire was comprised of 27 questions divided into two sections: Perceptions of service-learning projects, evidence-based design projects, and the interior design profession; and participant demographics.

Data Collection Process

The Institutional Review Board (IRB) for the Protection of Human Participants in Research at North Dakota State University (NDSU) and the University of Nebraska-Lincoln (UNL) were contacted to obtain the necessary permission to conduct the research study.

Online training for Human Subjects Protection was completed using the Collaborative Institutional Training Initiative (CITI) online course modules. The principal investigator, Ann Marie Ragan, thesis advisor/co-investigator, Dr. Betsy Gabb, and research team member, Dr. Susan Ray-Degges for this study have completed and passed the required CITI course modules as of November 2012.

Permission to distribute the survey to NDSU third year interior design students was obtained from the College of Human Development and Education and the Apparel, Design and Hospitality Management as of November 2012. The Informed Consent form, final survey, and exempt research protocol form was submitted electronically to IRB at NDSU and then electronically to UNL. After minor revisions to the Informed consent

form and the research protocol, the research study was approved by the IRB at NDSU.

Following approval with “exempt” status by the IRB at NDSU (Appendix B), the IRB at UNL (Appendix A) approved the research study with “exempt” status.

Participants

The specific sample for the study was comprised of third year students enrolled in the North Dakota State University Interior Design program course titled *ADHM 351 Interior Design Studio IV: Advanced Residential*. The sample was selected based on the student’s involvement in both an EBD project and a service-learning EBD studio project during the Fall 2012 semester. Accessibility to the sample was another consideration, as the principal investigator for this research was the instructor for the course.

A paper questionnaire (Appendix C) with an informed consent letter (Appendix A) was distributed to the students by a Dr. Ray-Degges, a research team member, during the *ADHM 351 Interior Design Studio IV: Advanced Residential* class meeting time. The principal investigator was not present during the distribution and collection of the questionnaire to encourage more sincere responses and obtain more reliable data. A thank you was included in the informed consent letter and at the end of the questionnaire. The questionnaire was not a required component of the course and did not contribute to the calculation of the student’s final course grade. The questionnaire was distributed to the participants upon the completion of the both projects.

Response Rate

16 surveys were distributed to students enrolled in the *ADHM 351 Interior Design Studio IV: Advanced Residential* course during the Fall 2012 semester. 16 Surveys were returned, resulting in a 100% response rate.

Consent

Consent was implied when the paper survey was completed and collected by the research team member on the day the survey was distributed.

Chapter IV: Survey Results Analysis

Survey data was organized into categories including: participant demographics, how research is used in the profession, understanding the difference between gathering information and conducting research, connecting EBD to courses taken, service-learning projects, commitment to the health, safety and welfare of users of interior spaces, and impact of research on the advancement of the interior design profession. These categories linked the study question to the rationale for asking the question to the participants.

Questions within the questionnaire are analyzed together for comparison when topics related or converged. Qualitative and quantitative data were interpreted using a triangulation analysis process. This process combined the different data collected and connected it to common themes determining if the results converged, complemented or was inconsistent. Statistical data was only meaningful for a portion of the questions.

Participant demographics

Study Question 23. Please indicate what year in the North Dakota State University Interior Design program you are currently enrolled.

100% of the respondents indicated they were currently enrolled as a third year student in the North Dakota State University Interior Design Program.

Study Question 21. Please indicate your age.

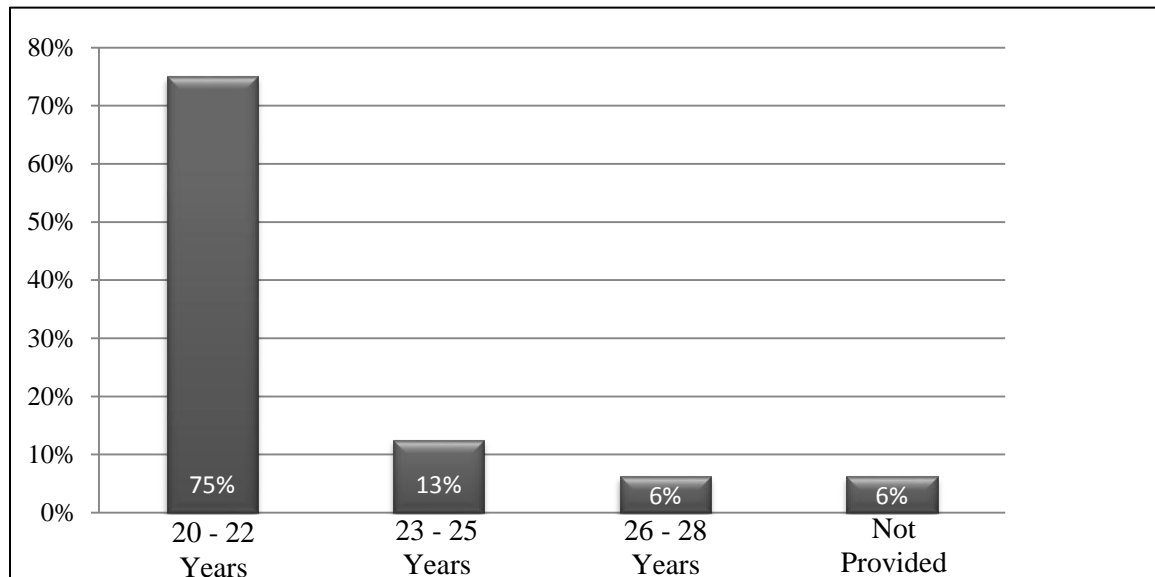


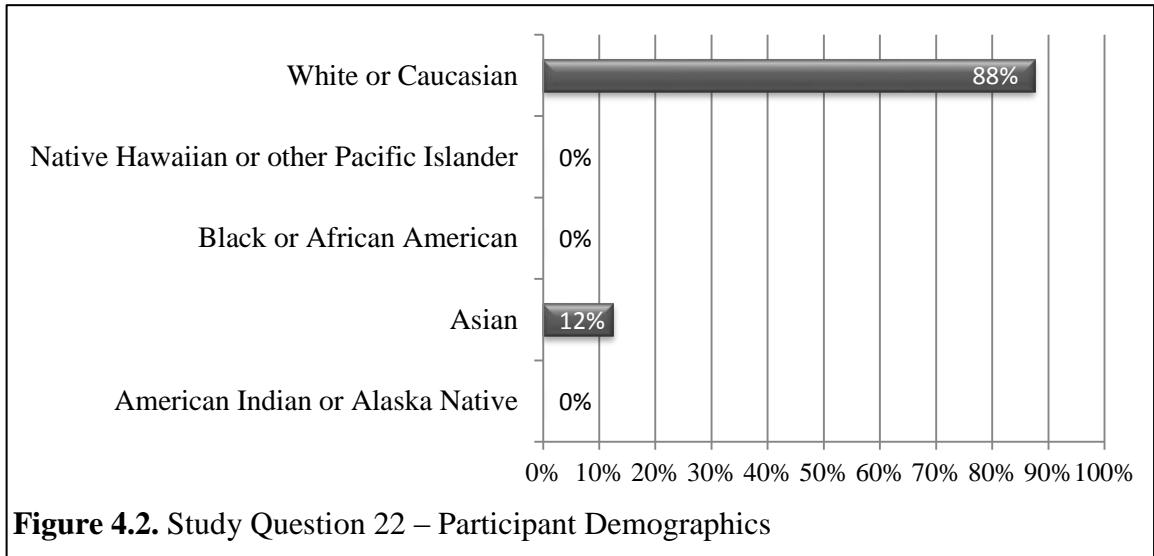
Figure 4.1. Study Question 21 – Participant Demographics

The majority, 75%, of the respondents indicated their age as being 20-22 years. This age corresponded with the age of what is considered to be a traditional college student who is in their third year of study.

Study Question 20. Please indicate your gender.

88% of the respondents indicated they are female.

Study Question 22. Please specify your race.



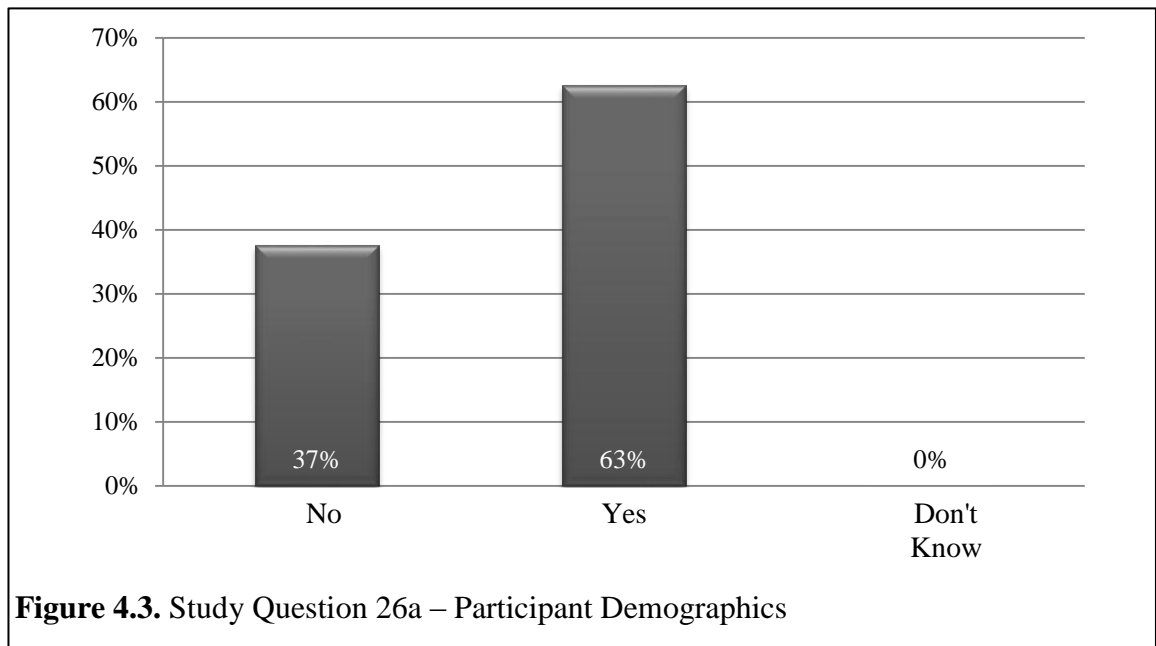
88% of the respondents identified themselves as being White or Caucasian, and 12% indicated they were Asian.

Study Question 25. Have you worked previously as a professional interior designer?

100% of the respondents indicated that they had not worked as a professional interior designer.

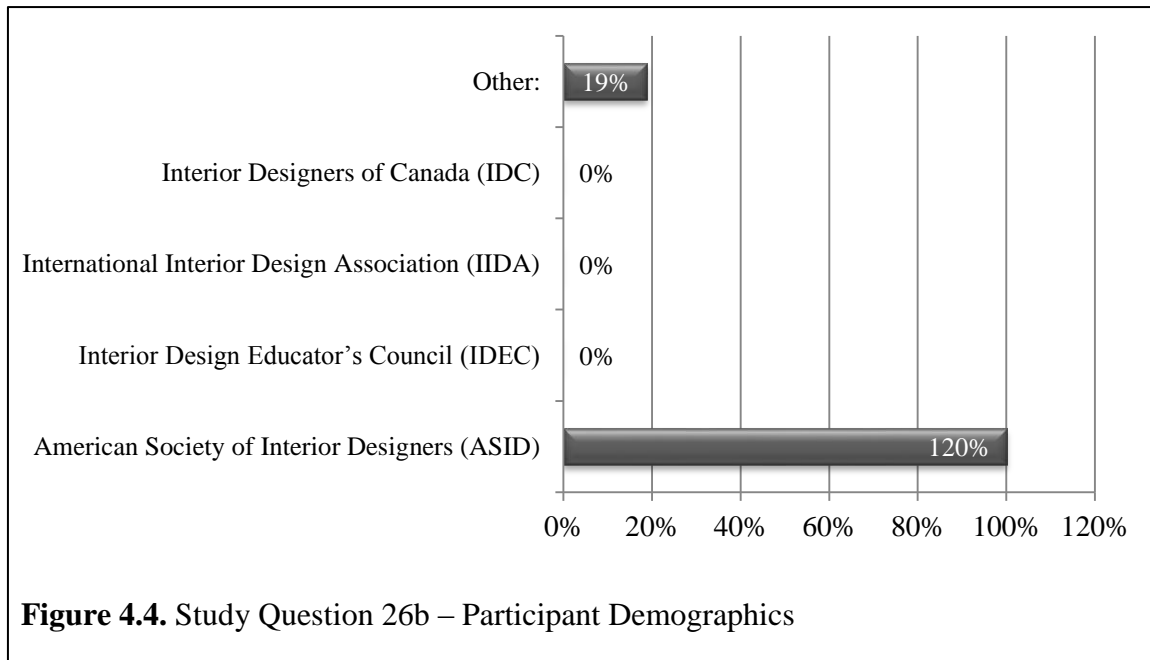
Study Question 26a. Are you a member of a professional interior design organization?

The majority of participants, 63%, of the respondents stated that they are members of a professional organization.



Study Question 26b. If you selected “yes” please indicate which organizations you are a member: Please check all that apply.

Of the respondents who indicated they were members of a professional organization 120% indicated that they belong to the American Society of Interior Designers (ASID). 20% of the respondents indicated that they were not members of a professional organization for Study Question 26a, and then indicated that they were a member of the American Society of Interior Designers (ASID) resulting in a 120% response rate for study question 26b. It is unclear as to why they selected ASID if they previously indicated that they were not members of a professional organization.



100% of the respondents who selected “other” for Study Question 26b wrote in that they were members of North Dakota Interior Designers (NDID).

Study Question 27. Do you serve as an officer in a student chapter of a professional interior design organization?

60% of the respondents who indicated they were members of a professional interior design organization indicated they serve as an officer in a student chapter of a professional organization.

How Research is used in the Profession

Study Question 3. Evidence-based design is an effective means for developing and creating interior design solutions.

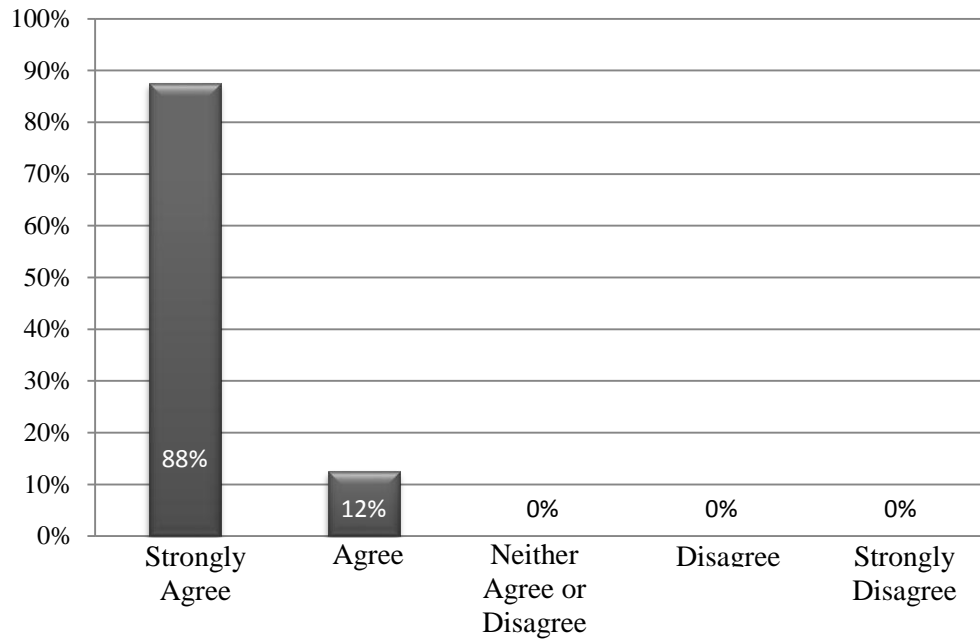


Figure 4.5. Study Question 3 – How Research is used in the Profession

The majority, 88%, found EBD to be an effective means for developing and creating interior design solutions. None of the participants were indifferent or felt EBD was not an effective means for developing and creating interior design solutions.

Study Question 5. Evidence-based design should be used for most commercial interior design projects.

The majority, 44%, indicated that EBD should be used for most commercial interior design projects and 31% indicated strong support for EBD to be used for most commercial interior design projects. 6% of the respondents did not agree that EBD should be used for most commercial design projects, 19% indicated an impartial response.

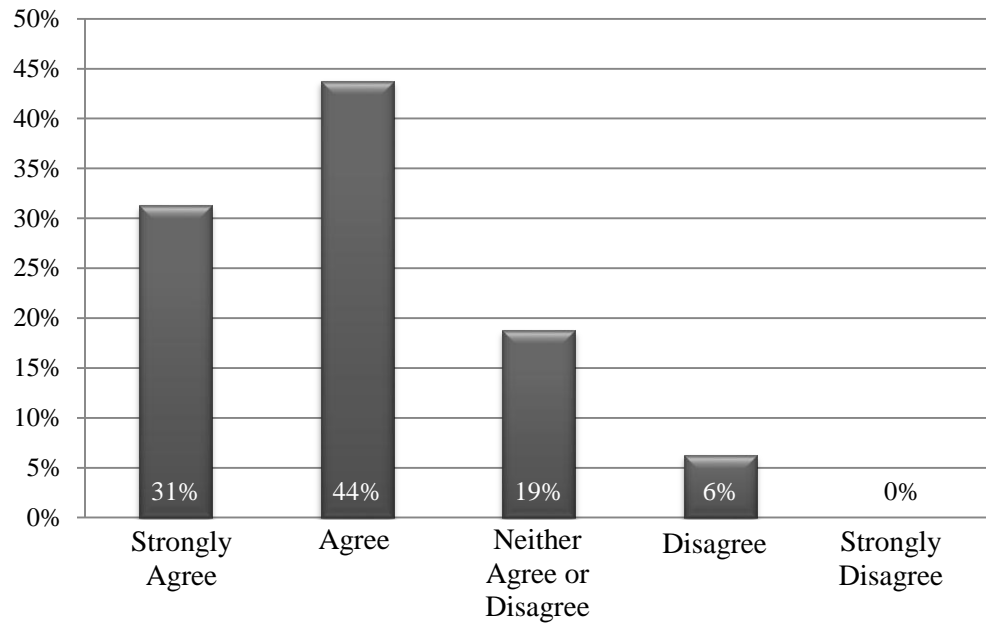


Figure 4.6. Study Question 5 – How Research is used in the Profession

Study Question 8. Evidence-based design is not used in the commercial interior design industry.

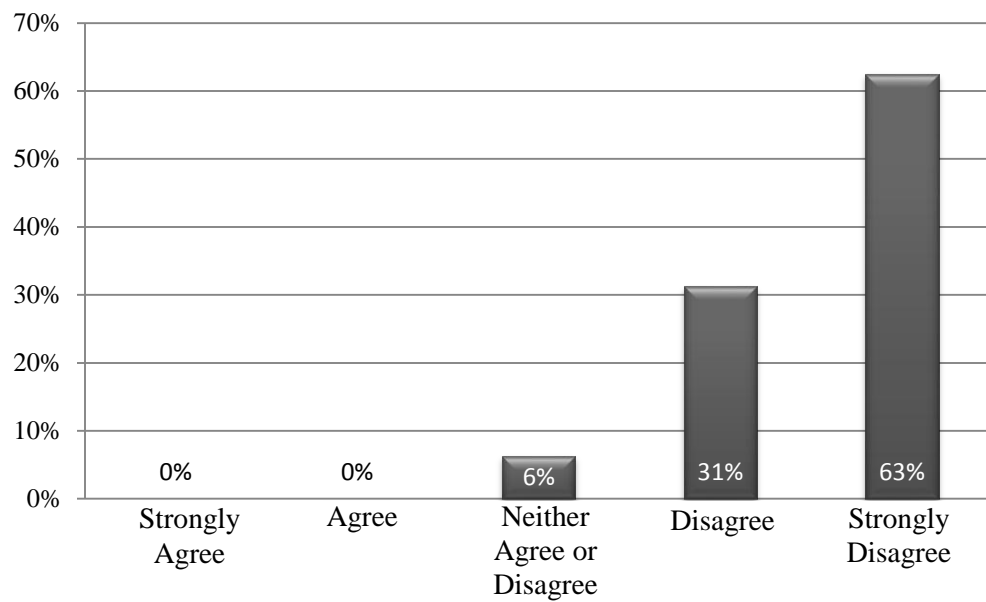
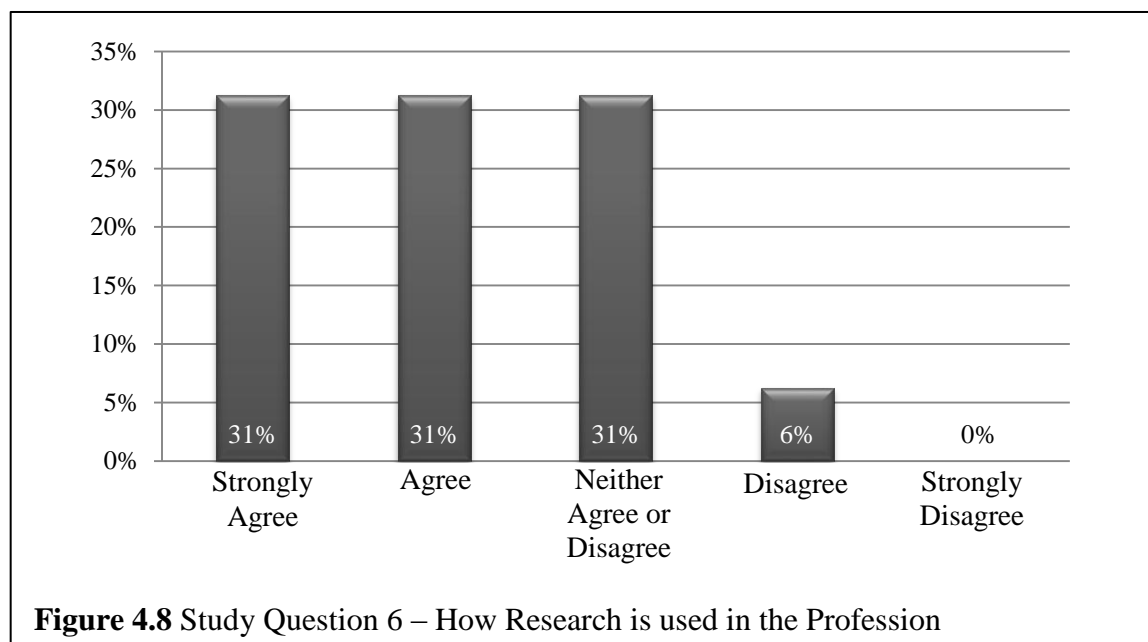


Figure 4.7. Study Question 8 – How Research is used in the Profession

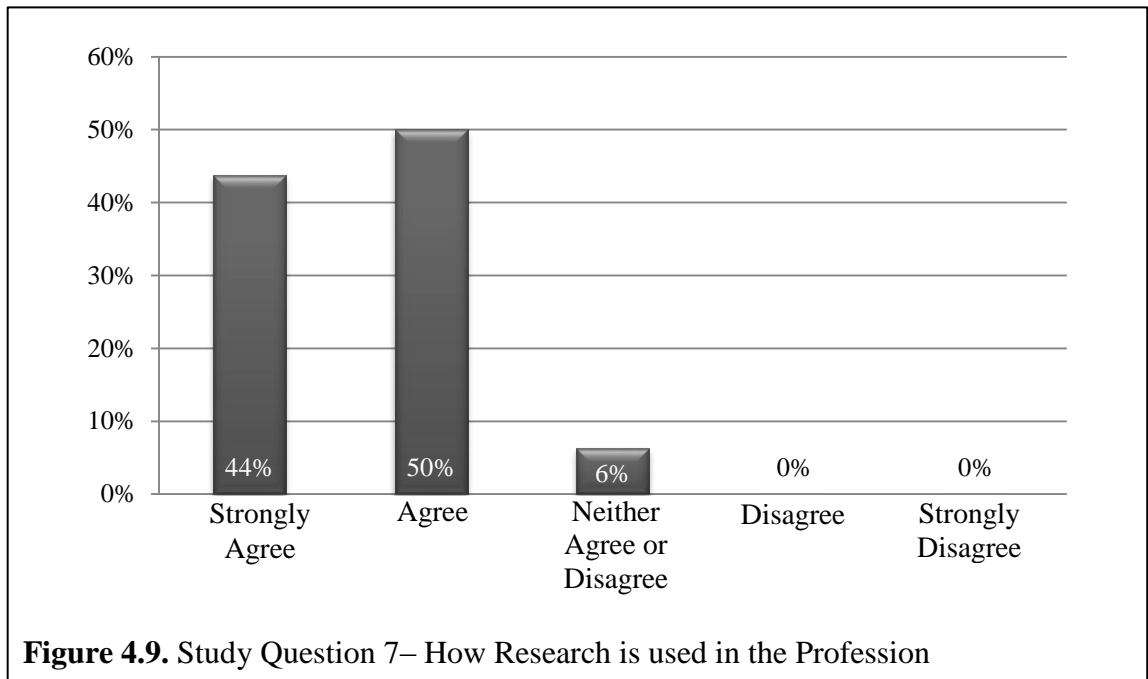
The majority, 63%, of respondents indicated EBD is currently used in the commercial interior design industry. None of the participants indicated that EBD is not used in the commercial interior design industry, however 6% were impartial.

Study Question 6. Evidence-based design should be used for some commercial interior design projects.



The majority, 62%, of respondents either agreed or strongly agreed that some commercial interior design projects should utilize EBD. The 31% who were impartial with their response to study question 6 when compared with study question 5 could feel EBD should be used for more than just some projects.

Study Question 7. Evidence-based design solutions are effectively used for specialty commercial interior design projects.



The majority, 94%, of the respondents indicated that EBD was an effective method of design for specialty commercial interior design projects. A small amount, 6%, of the respondents were indifferent, however none of the respondents indicated that EBD was not an effective method of design for specialty commercial interior design projects.

Study Question 9. Evidence-based design is used for most residential interior design projects.

The majority, 44%, of the respondents were indifferent with their response to this question. This could elude to the respondents not knowing if EBD is used in most residential interior design projects or that they did not believe EBD is used for most residential interior design projects. 37% indicated that EBD was not used for most residential design projects.

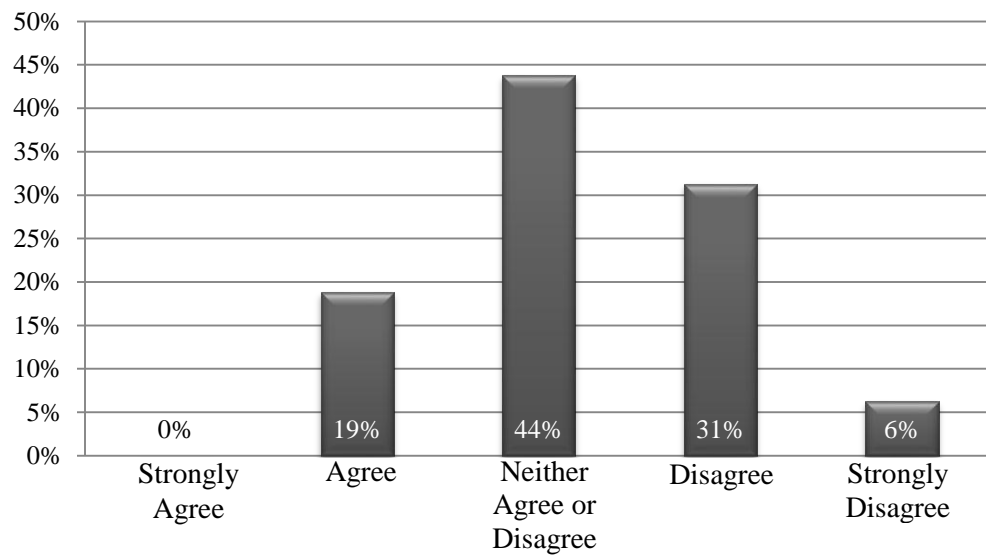


Figure 4.10. Study Question 9– How Research is used in the Profession

Study Question 10. Evidence-based design is used for some residential interior design projects.

The majority, 75%, of the respondents found EBD solutions to only be used for some residential interior design projects.

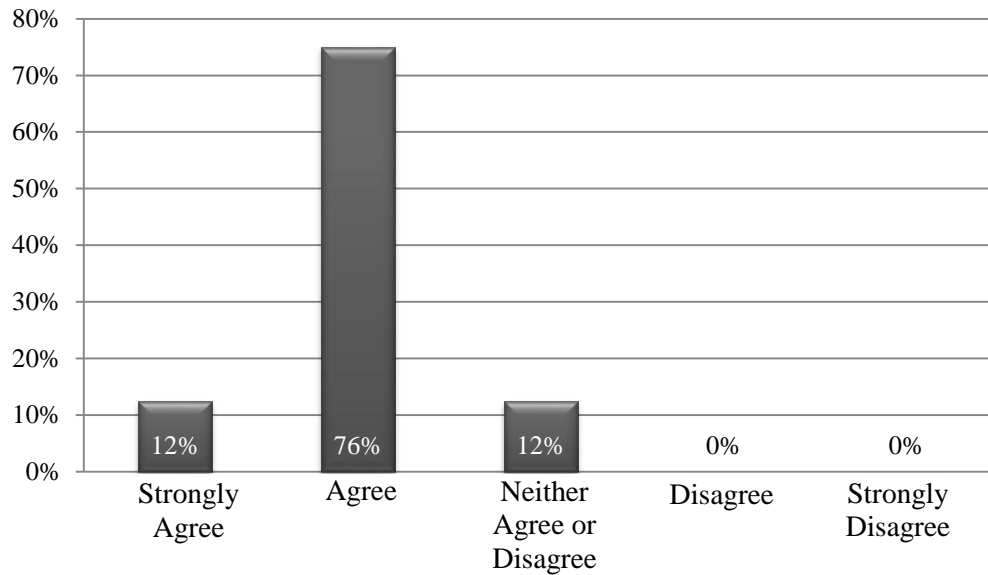


Figure 4.11. Study Question 10 – How Research is used in the Profession

Study Question 11. Residential interior designers use evidence-based design exclusively for specialized interior design projects.

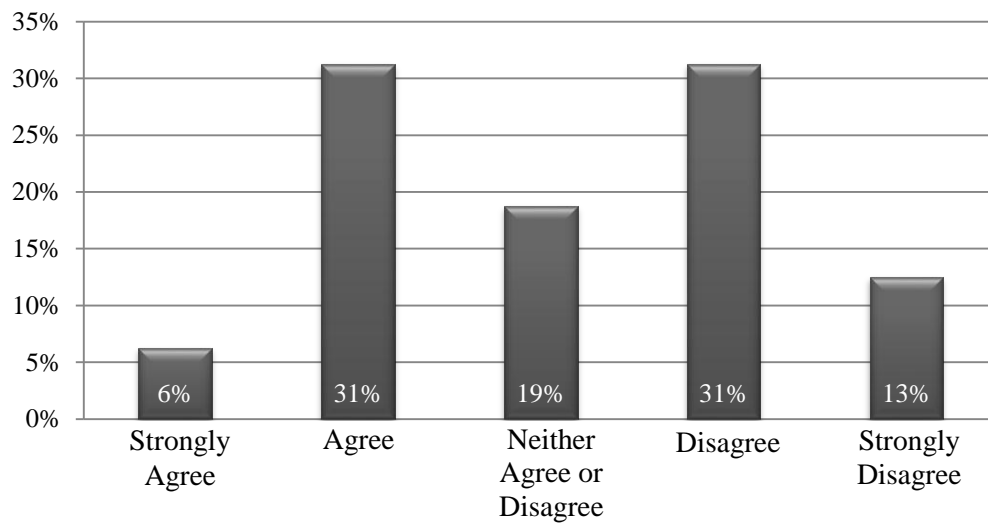
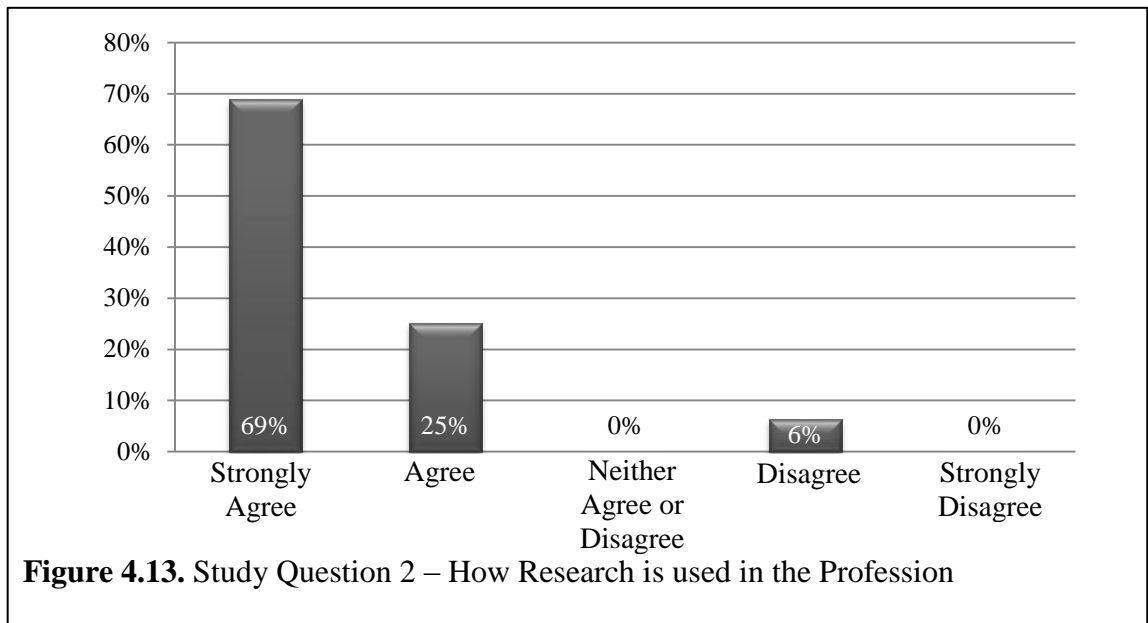


Figure 4.12. Study Question 11 – How Research is used in the Profession

The respondents seemed to be split between whether or not EBD should be exclusively for specialty residential design solutions or not. When considering study question 10 the responses for study question 11 might indicate that respondents think EBD should only be used for specialty designs. When considering study question 9, the responses for study question 11 could be a result of respondents thinking residential interior designers do not use EBD.

Study Question 2. Evidence-based design involves conducting research studies while working on design projects.

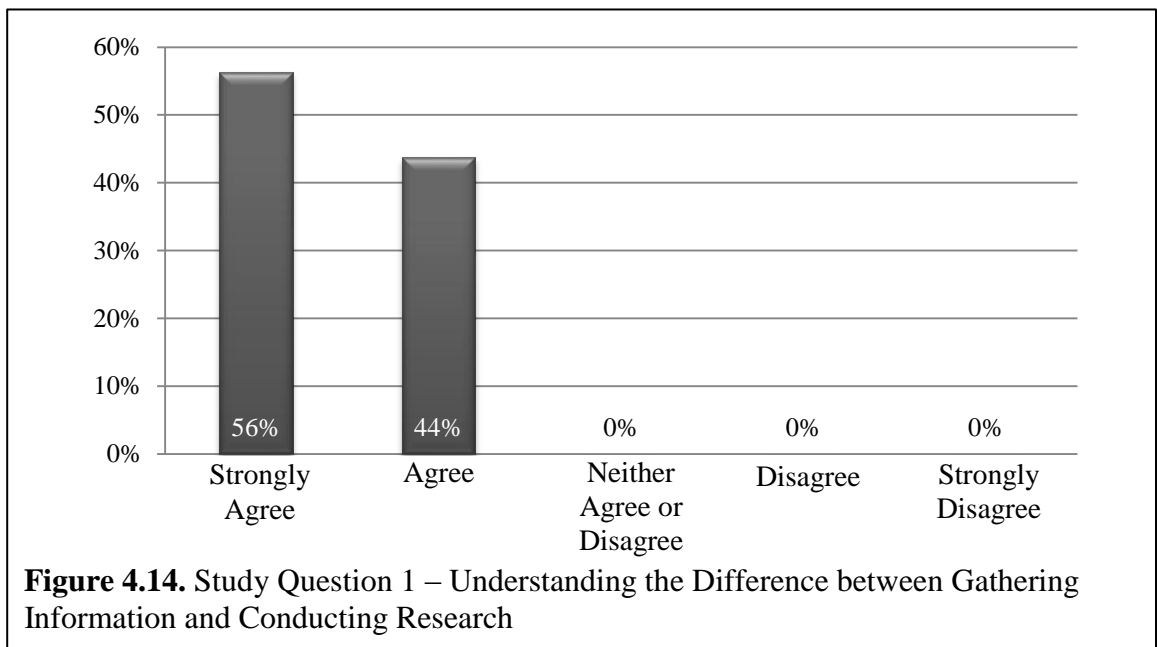


The majority, 69%, of the respondents indicated that EBD involves conducting research studies while working on design projects. A small amount, 6%, disagreed with the majority which could mean they do not believe all EBD involves conducting research

studies or this could mean they do not think research studies are conducted as a component of an EBD project.

Understanding the Difference between Gathering Information and Conducting Research

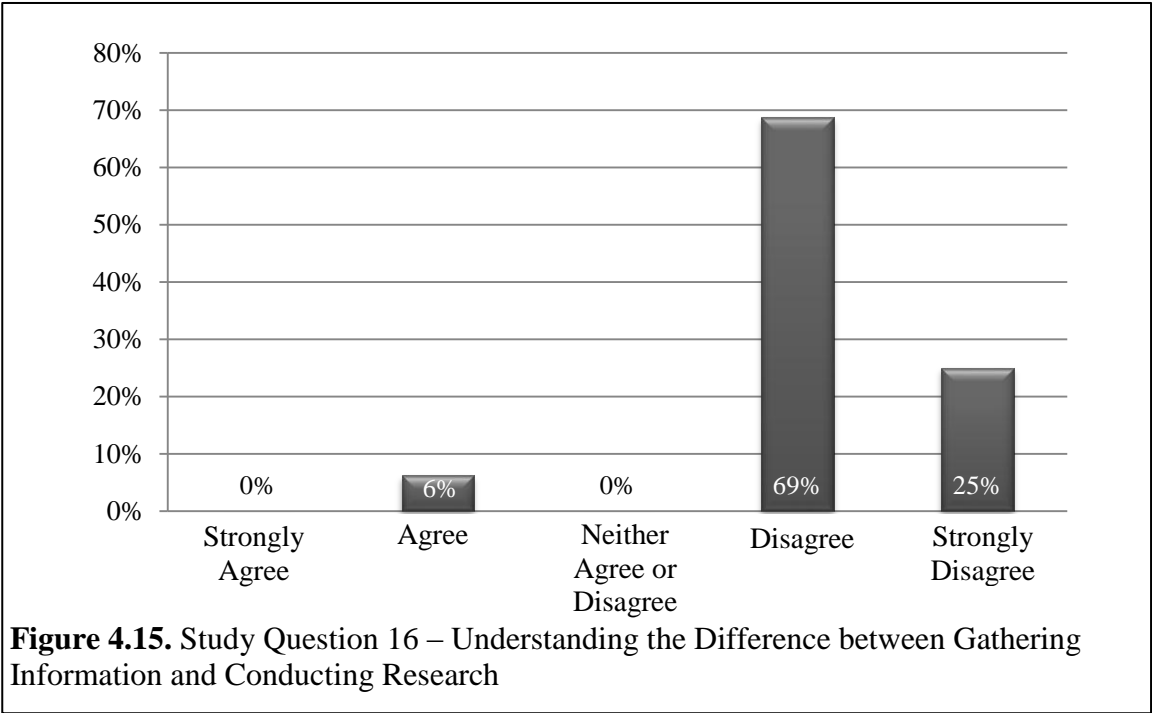
Study Question 1. Evidence-based design is the process of using the results of existing research conducted by interior designers and professionals outside of the interior design industry to create design solutions.



The majority, 56%, of the respondents indicated that EBD is the process of using the results of existing research conducted by interior designers and professionals outside of the interior design industry to make design decisions. None of the respondents indicated that existing research was not used “to create design solutions”.

Study Question 16. Gathering information and conducting research is the same thing.

The majority, 69%, of the respondents indicated that gathering information and conducting research are two different things. Only 6% of the respondents considered gathering information and conducting research to be one in the same.



Connecting Evidence-Based Design to Courses Taken

Study Question 24a. Have you taken a course(s) that incorporated evidence-based design?

100% of the respondents indicated that they had taken a course that included EBD into the curriculum.

Study Question 24b. If you selected “yes” please indicate the name of the course:

88% of the respondents listed *ADHM 351* or *ADHM 351 Interior Design Studio IV: Advanced Residential* as one of the courses they have taken that incorporated EBD. 38% listed additional courses including *ADHM 253 Commercial Office Design* and *ADHM 250 Interior Environmental Analysis*. *ADHM 253* was a commercial office design studio course and *ADHM 250* was a programming lecture course at North Dakota State University.

Study Question 24c. If you selected “Yes” what type of course (s) did you take? Check all that apply.

The majority of courses taken by respondents were categorized as studio courses by the respondents. 50% indicated that EBD projects were used in combination courses that include both lecture and studio components. Few, 6%, respondents indicated EBD projects were used in lecture courses.

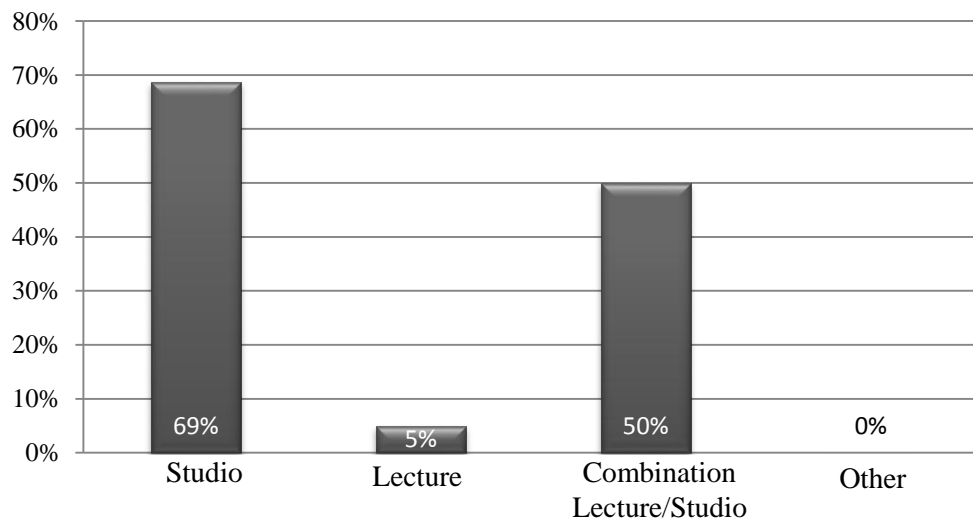
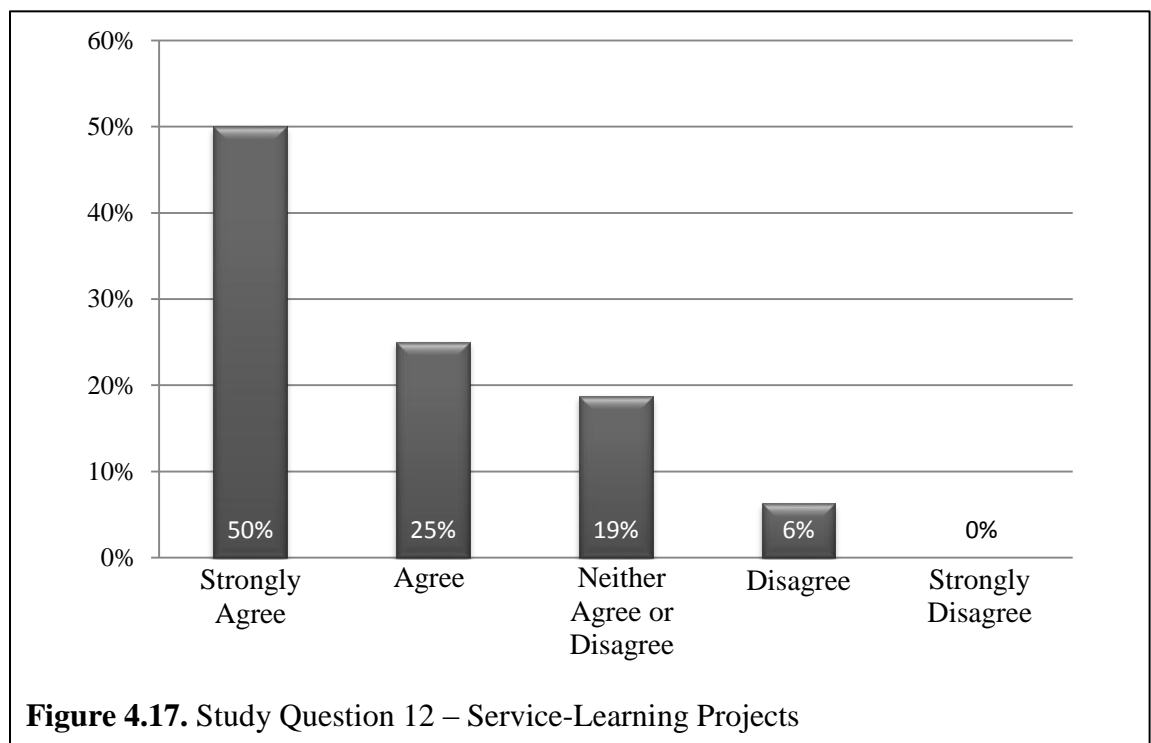


Figure 4.16. Study Question 24c – Connecting Evidence-Based Design to Courses Taken

Service-Learning Projects

Study Question 12. I am more interested in studio projects involving a real client and space.

50% of the respondents indicated a strong interest and 25% indicated an interest in studio projects involving a real client and space.



Study Question 13. I am more interested in studio projects involving a fictional client and space.

The majority, 69%, of respondents indicated indifference to being more interested in projects involving fictional clients. 31% of the respondents indicated that they were not more interested in studio projects involving fictional clients.

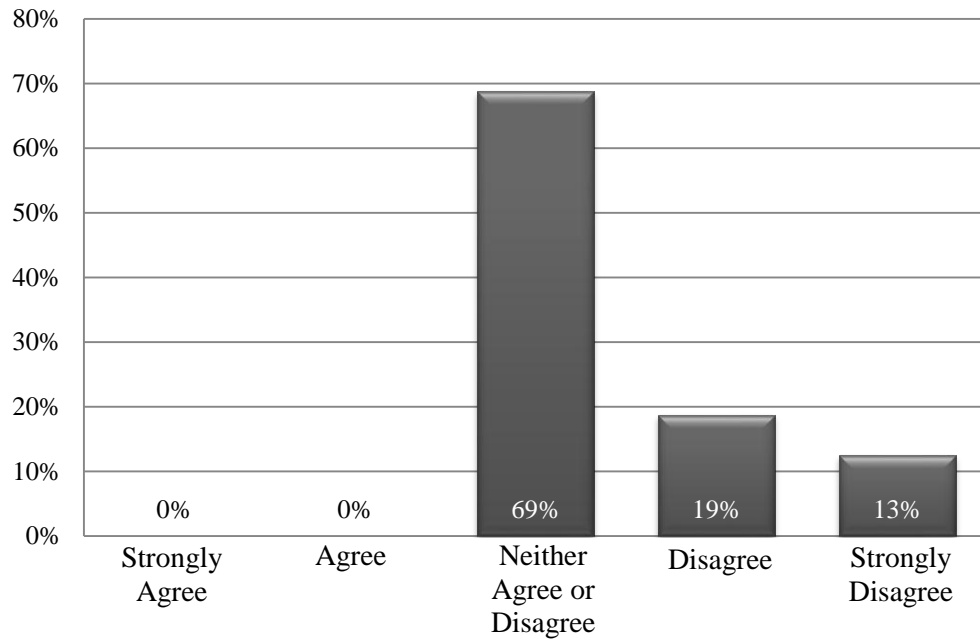


Figure 4.18. Study Question 13 – Service-Learning Projects

Study Question 14. I have no interest in service-learning studio projects.

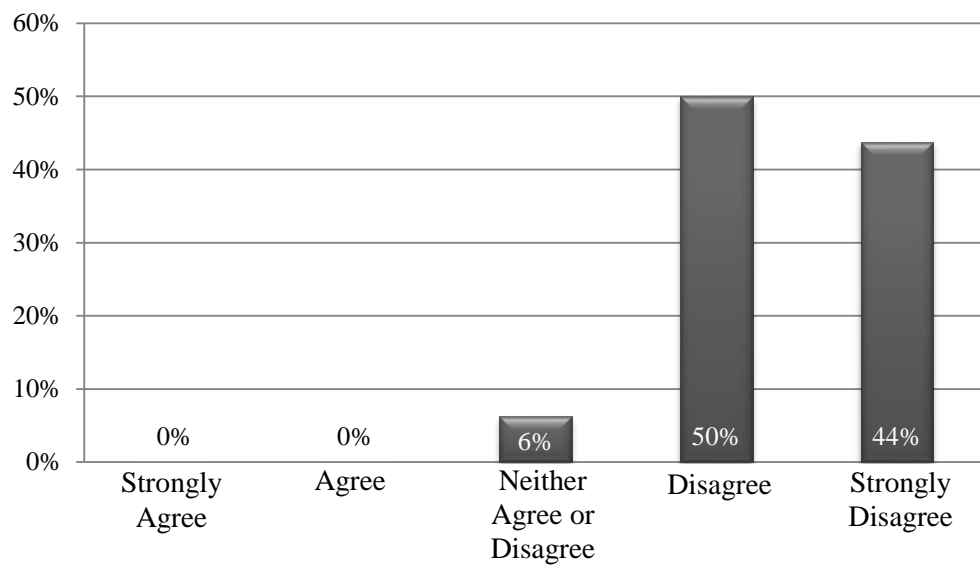
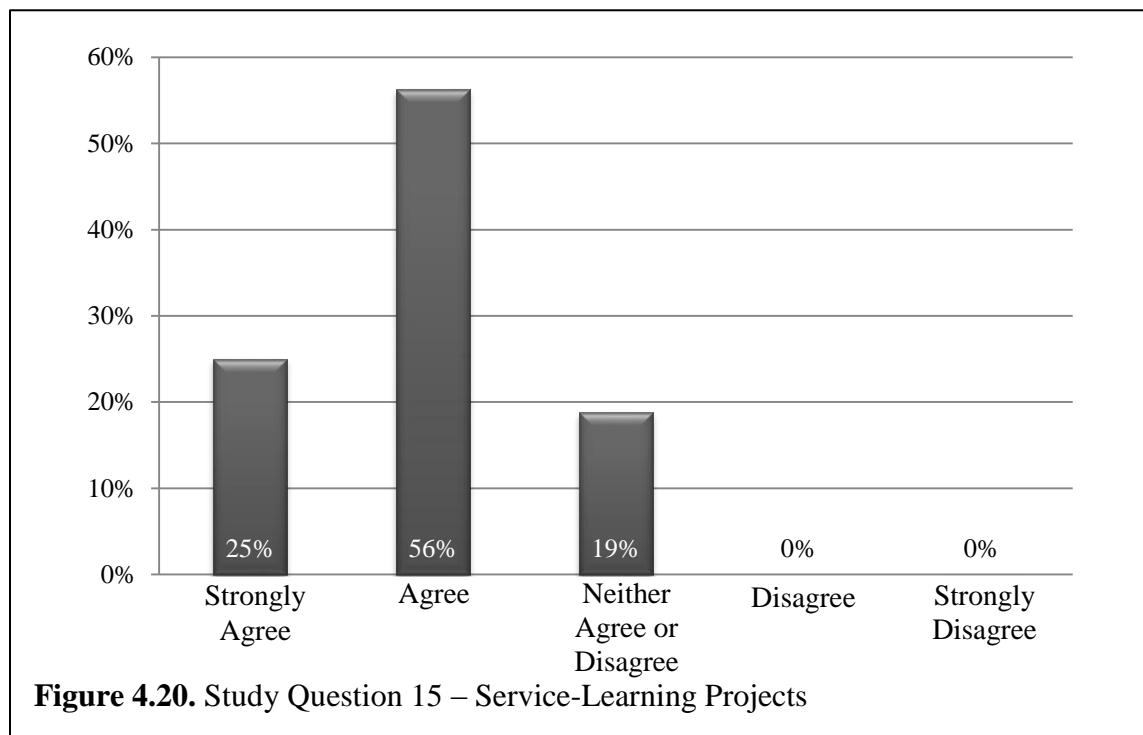


Figure 4.19. Study Question 14 – Service-Learning Projects

An astounding 94% of the respondents indicated an interest or strong interest in service-learning projects. No respondents indicated that they had no interest in service-learning studio projects.

Study Question 15. I am more interested in service-learning studio projects than the traditional fictional studio project.

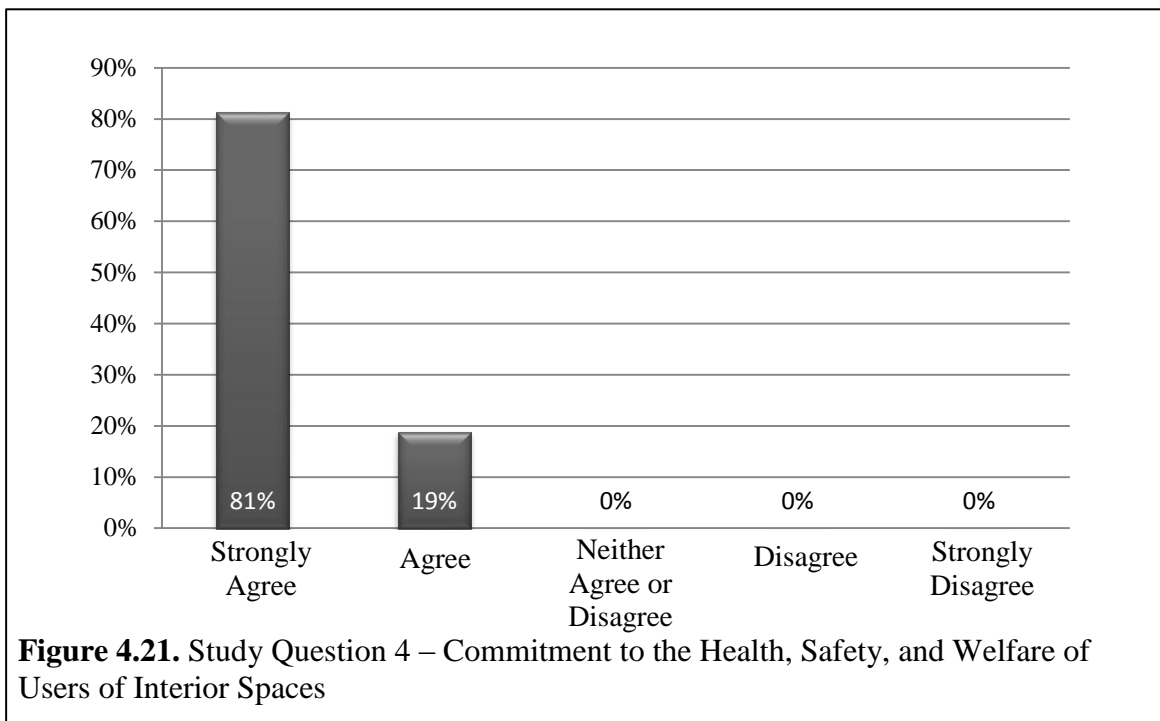
The majority, 56%, of the respondents showed a greater interest in service learning projects than the traditional fictional studio project.



Commitment to the Health, Safety, and Welfare of Users of Interior Spaces

Study Question 4. Evidence-based design is an effective means for developing and creating interior design solutions for people with special needs.

81% of the respondents indicated that EBD is an effective means for interior design projects involving clients with special needs. No respondents indicated EBD as being an ineffective design method for interior designers creating design solutions for people with special needs.



Study Question 17. It is necessary for interior designers to provide evidence or research supporting their interior design solutions to their clients.

The majority, 94% of respondents indicated that it is necessary for interior designers to use evidence or research to justify design solutions to clients. These results indicated that the respondents thought there is a need for reasons beyond personal opinion/experience to be utilized in the creation of an interior design project.

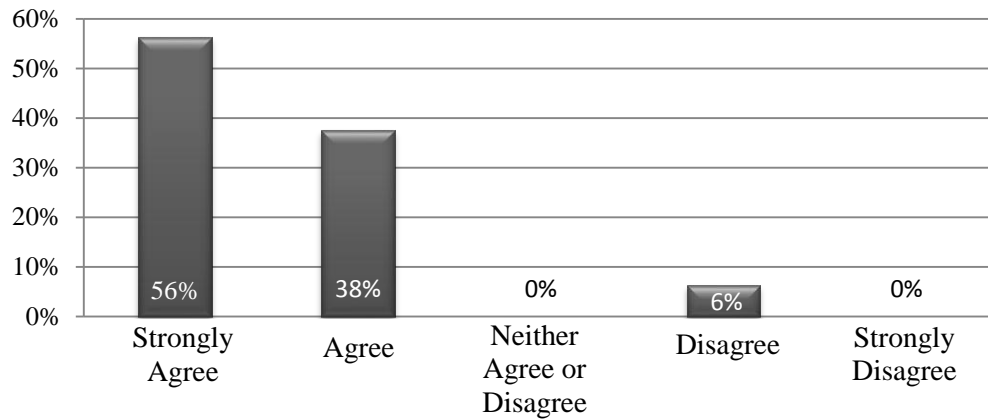


Figure 4.22. Study Question 17 – Commitment to the Health, Safety, and Welfare of Users of Interior Spaces

Impact of Research on the Advancement of the Interior Design Profession

Study Question 18. The interior design profession does not benefit from interior designers conducting research.

An overwhelming 81% of respondents indicated that the interior design profession benefits from conducting research. None of the respondents were impartial or indicated that the profession does not benefit from interior designers conducting research.

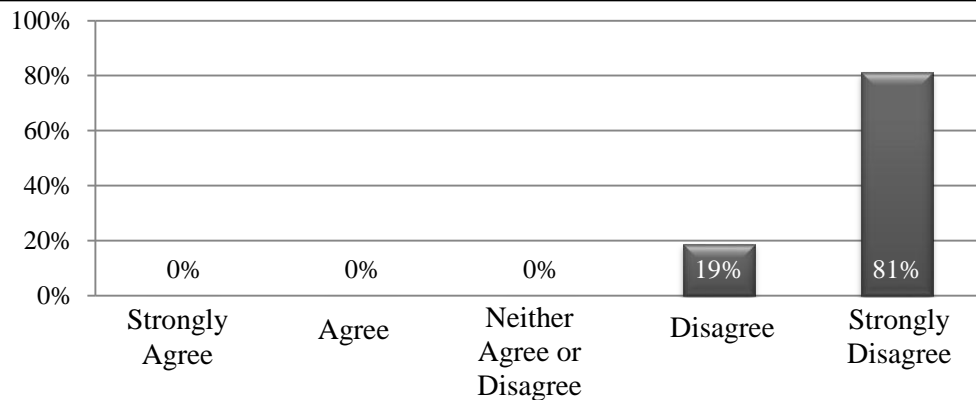


Figure 4.23. Study Question 18 – Impact of Research on the Advancement of the Interior Design Profession

Omitted Question

Study Question 19. The interior design profession benefits from interior designers conducting research.

This question was redundant and was the same question as study question 18, therefore it was omitted.

Chapter V: Survey Results Conclusions

Respondents for this research study were comprised of 3rd year interior design students enrolled in the NDSU course titled *ADHM 351 Interior Design Studio IV: Advanced Residential*. The majority (75%) of the students were within the age range of “20-22 years” which is indicative of traditional college students beginning their third year of study. A small percentage of the students (19%) would be considered non-traditional students based on age. Students were primarily female (88%) and white or Caucasian (88%). None of the students previously practiced as a professional interior designer, these results could be related to the majority of the students being traditional college students.

The majority (63%) of the students indicated that they were members of professional organizations. 120% of the respondents who indicated they were members of a professional organization indicated that they were a member of ASID. The results of this question could be due to some confusion regarding what was being asked or could be a result of students not associating the student chapter of ASID with the national ASID chapter. It is unclear exactly why 20% of the students selected ASID when they had not

indicated that they were in a professional organization. 60% of those respondents who are members of a professional organization served as officers for the NDSU student chapter of the organization with which they are a member. Active involvement in professional organizations has the potential to lead to a better understanding of the interior design industry. Chapter meetings, guest speakers, and tours offer students an opportunity to gain deeper understanding of how the business of interior design is conducted.

100% of the respondents thought EBD was an effective means for developing and creating interior design solutions. The most interesting results of this data were that when asked about how EBD was applicable in the commercial and residential interior design industry the majority of respondents found EBD to be more applicable in the commercial interior design industry, specifically specialty commercial projects. When research question 5 is compared with study question 9, where the majority, 44%, of participants neither agreed nor disagreed with the statement that “EBD is used for most residential interior design projects” and 31% completely disagree with this statement. A common theme emerged from study questions 3, 5, 8, and 9 although the majority, 88% of the respondents indicated in study question 3 that EBD is “an effective means for developing or creating an interior space”, respondents seemed to think commercial design projects were better suited for using EBD than residential interior design projects. Respondents indicated that interior designers working on specialty commercial design projects were more apt to utilize EBD methods. An interesting note to consider is that respondents indicated EBD as being appropriate for some residential design projects.

When asked if EBD should be used exclusively for specialized interior design projects, the respondents were split almost equally. Perhaps some believed EBD solutions should be reserved for only specialty design projects and some believed there are other types of residential projects that could benefit from interior designers using EBD. It is difficult to determine the cause for the split based on the results of this study.

An overwhelming majority of respondents associated EBD with conducting research studies (study question 2) while working on design projects. It would seem this might be the only perception the respondents had regarding EBD being used in the interior design industry. However, results from study question 1 indicate that 100% of the respondents identify EBD as being “the process of using the results of existing research conducted by interior designers and professionals outside of the interior design industry to create design solutions”. The results of questions 1 and 2 indicated the respondents’ definition of EBD as being conducted in various ways, by conducting research, or utilizing existing research to support or enhance an interior design solution.

All respondents indicated that they have taken a course that incorporated EBD. A theme of EBD projects being used in studio or lecture/studio combination courses emerged. It is unclear if respondents indicated the majority of courses using EBD projects were studios due to the program curriculum or if EBD studio projects are easier for students to identify as EBD projects. When asked about previous courses taken the two most common course names provided by respondents were *ADHM 253 Interior Design Studio II: Office Design* (ADHM 253) and *ADHM 250 Interior Environmental Analysis* (ADHM

250). ADHM 253 was a commercial interior design studio and ADHM 250 was primarily a lecture course, but included a studio type of project in the curriculum.

A third key theme to emerge was students having a greater interest in projects incorporating real clients as opposed to fictional clients. These results coincided with the respondents having a greater interest in service learning projects and indicating they were not “more interested in studio projects involving fictional clients”. This desire to work with real clients could be connected to a greater sense of purpose, accountability or perhaps a greater sense of civic duty. It is unclear of the exact motivation behind this preference for real clients or service-learning projects.

An overwhelming majority of respondents indicated EBD as being effective when working on projects that provide interior design solutions for people with special needs. This results combined with previous responses regarding when and where EBD is used in the interior design industries eluded to a theme that EBD is utilized when the interior designer is not as familiar about a particular type of design or the knowledge required to execute the design is outside of the interior designers current knowledge. The results for study question 4 supported previous results associated with how EBD is utilized in both the residential and commercial interior design industries. Respondents perceived EBD as being a type of design reserved for specialty projects or projects designed for a client with special needs.

When asked if interior designers need to provide clients with research or evidence that supports their design solutions (question 17), an overwhelming majority indicated that this was a necessity. The results could demonstrate respondents perceived value of research as being a valuable contribution to the design of a space or valuable evidence to present to clients in support of the interior design solution. These findings may indicate respondents want to not only provide a solution, but provide a solution that has proven benefits to the client.

When asked if the interior design profession benefits from interior designers conducting research (question 18) 100% of the respondents indicated a benefit. However, these results did not indicate the specific ways in which the interior design profession benefits from conducting research.

Chapter VII: Summary of Contributions

The following are the hypotheses (*in italics*) presented in this thesis and the corresponding responses based on research conducted.

1. *If students participate in service-learning projects that incorporate EBD then they will understand how research is used in the profession.*

TRUE: Students who participated in service-learning projects that incorporated EBD indicated EBD as being used in both the commercial and residential interior design profession as a means for creating effective designs and supporting design decisions made by professional interior designers.

2. *If students participate in a service-learning project focused on EBD procedures then they will understand the difference between gathering information and conducting research.*

TRUE: Students who participated in a service-learning project focused on EBD procedures recognized that there is a difference between gathering information and conducting research.

3. *If students participate in a service-learning project focused on EBD procedures then they will develop a deeper commitment to the health, safety and welfare of users of interior spaces.*

TRUE: Students who participated in a service-learning project focused on EBD procedures recognized that EBD is currently used for specialty interior design projects requiring additional knowledge beyond the scope of knowledge required by practicing interior designers. Students recognized a need to not only provide a solution to a client, but provide clients with a solution that has proven benefits, reflecting a deeper commitment to the health, safety and welfare of users of interior spaces.

4. *If students participate in a service-learning project focused on EBD procedures then the students will understand the impact research has on the advancement of interior design as a profession.*

FALSE: Although students recognized that the interior design profession benefits from interior designers conducting research the exact perceived benefits cannot be determined by the results of this research study.

Chapter VIII: Study Conclusions

It is vital for professionals to engage in the process of conducting research. The expansion of the interior design BOK further defines the role of a professional interior designer in society. EBD solutions provide a means for professional interior designers to conduct research and utilize the results to improve and expand on existing knowledge of design solutions.

Students indicated that EBD produced effective and creative design solutions. This support gives merit and value to EBD projects being used in undergraduate interior design courses. Although respondents indicated EBD involved using the results of existing research conducted by interior designers or those outside the field of interior design and conducting research studies while working on design projects, respondents believed EBD involves conducting research studies while working on design projects demonstrates the student's knowledge of EBD practices and that conducting research is not out of the scope of an interior designers' responsibilities. The most significant finding is that all respondents thought the interior design profession benefited from interior designers conducting research.

Although most respondents believed EBD was currently used more in the commercial design rather than the residential interior design industry the respondents viewed EBD as valuable to the interior design industry and indicated it should be used more in both residential and commercial interior design industries, and for specialty interior design projects. Respondents thought EBD could enhance specialty projects and was viewed as an extremely helpful component of the design process when designing for individuals with special needs.

The majority of students associated EBD projects with courses that are a studio course or have a studio type of project incorporated into the courses. Another finding was the students' greater interest in interior design studio projects that incorporated real clients and spaces. A significant finding was that all the respondents were interested in service-learning projects. Students' interest in service-learning projects combined with an understanding of the value of EBD shows the potential for faculty to increase the level of engagement of students while nurturing research skills for future use in the interior design field.

Chapter IX: Limitations

The most significant limitation of this research study was the size of the sample. The sample was from a small population of students who are all enrolled in the same course located at the same university, which created a limited perspective of the topics referred to in the research study questionnaire, since all students share the same interior design curriculum experience.

Other limitations were that the primary investigator was the instructor for the course the students were taking at the time the surveys were distributed and completed by the students. Although the survey was anonymous and distributed and collected by another research team member it is entirely possible that knowing the primary investigator was the instructor affected some of the responses of some of the students.

Chapter X: Future Research

A need exists for additional studies of several topics discussed in this research study. The findings of this study demonstrated students' understanding of EBD and the various ways in which research is used in the interior design industry. Students also indicated a great interest in service-learning projects and projects incorporating real clients and spaces.

Research studies involving the analysis of curriculums from several comparable programs and universities that incorporate EBD into their curriculum are needed.

Gaining an understanding of the most effective courses for introducing EBD to interior design students or the most effective means for executing EBD studio projects at an undergraduate level may help faculty formulate a curriculum that promotes the use of EBD.

Particularly interesting was that students indicated an overwhelming interest in service-learning projects and projects using real clients. Future research is needed to understand their views and motivations behind their desire to work on service-learning projects or

projects using real clients. Understanding students' motives behind wanting to work on these types of projects would be helpful in understanding what elements of a studio project leads to a deeper level of engagement by the students participating in the project.

Respondents in this study found interior designers conducting research to be beneficial to the interior design profession. A study is needed to determine if this belief is shared with students at other universities. Determining the students perceived benefits of professional interior designers conducting research could help to explain why students in this study indicated conducting research as being a benefit to the interior design industry. This information would be valuable to faculty who may want to alter their curriculum to encourage students to conduct research for the betterment of the interior design profession. Encouraging students to see beyond the immediate benefits of conducting research for their individual projects has the potential to help them recognize the impact their work has on the interior design profession.

Appendix A



COLLEGE OF ARCHITECTURE
Architecture & Interior Design Programs

Informed Consent Form

Evidence-Based Service-Learning Interior Design Projects: Engaging Undergraduate Students and Advancing the Interior Design Body of Knowledge



Dear participants:

My name is Ann Marie Ragan. I am a graduate student in the College of Architecture at University of Nebraska Lincoln, and I am conducting a research project to explore evidence-based knowledge of interior design students participating in a service-learning project. It is my hope, that with this research, we will learn more about effective teaching strategies for teaching the value of conducting research to future interior designers. Results of this research study have the potential to influence the curriculum of interior design programs through the introduction of alternative studio projects, i.e. service-learning projects.

Because you are currently enrolled in the North Dakota State University studio course titled *ADHM 351 Interior Design Studio IV: Advanced Residential* and are participating in a service-learning project, you are invited to participate in this research project. Your participation is entirely your choice, and you may change your mind or quit participating at any time, with no penalty to you. No compensation will be provided for the completion of this questionnaire. It is not possible to identify all potential risks in research procedures, but I have taken reasonable safeguards to minimize any known risks.

Understanding effective teaching strategies could lead to the application of these strategies in the classroom. As a result students have the potential to evolve into practitioners or faculty with a pre-existing sense of responsibility to contribute to the interior design body of knowledge. However, you may not get any benefit from being in this study. Completion of the questionnaire implies your consent.

Once you decide to participate in the study, you will be asked to complete a questionnaire in Katherine Kilbourne Family Life Center Room 116, North Dakota State University, Fargo, ND. The questionnaire is 27 questions in length and should take approximately 30 minutes to complete.

This study is anonymous. That means that no one, not even members of the research team, will know that the information you give comes from you. I will keep private all research records that identify you, to the extent allowed by law. Your information will be combined with information from other people taking part in the study, I will write about the combined information that we have gathered. You will not be identified in these written materials. I may publish the results of the study; however, I will keep your name and other identifying information private.



COLLEGE OF ARCHITECTURE
Architecture & Interior Design Programs



You have rights as a research participant. If you have questions about your rights or complaints about this research, you may talk to the researcher or contact:

- The University of Nebraska - Lincoln Institutional Review Board (IRB) at (402) 472-6965
- The North Dakota State University Human Research Protection Program at 701.231.8908, ndsuirb@ndsu.edu, or by mail at: NDSU HRPP Office, NDSU Dept 4000, PO Box 6050, Fargo, ND 58108-6050.

If you have any questions about the research study, you can contact me at Ann.Ragan@ndsu.edu or (701) 231-7359 or my advisor, Betsy S. Gabb, Ed. D., at bgabb1@unl.edu or (402) 472-9245. If you wish to receive a copy of the results, please email me at Ann.Ragan@ndsu.edu. Thank you for your taking part in this research.

In event of problems resulting from this study, psychological treatment is available for no charge at the North Dakota State University Counseling Center at 701-231-7671, www.ndsu.edu/counseling or at the North Dakota State University Counseling Center Office at Ceres 212.

Thank you for your time and consideration,

Ann Marie Ragan

Appendix B

NDSU

NORTH DAKOTA STATE UNIVERSITY

Institutional Review Board

*Office of the Vice President for Research, Creative Activities and Technology Transfer
NDSU Dept. 4000
1735 NDSU Research Park Drive
Research 1, P.O. Box 6050
Fargo, ND 58108-6050*

701.231.8995

Fax 701.231.8098

Federalwide Assurance #FWA00002439

Monday, November 19, 2012

Ann Marie Ragan

Apparel, Design, and Hospitality Management

**Re: IRB Certification of Exempt Human Subjects Research:
Protocol #HE13098, "Evidence-Based Service Learning Interior Design Projects: Engaging
Undergraduate Students and Advancing the Interior Design Body of
Knowledge"**

Co-investigator(s) and research team: **Susan Ray-Degges**

Certification Date: 11/19/2012

Expiration Date: 11/18/2015

Study site(s): **NDSU**

Funding: **n/a**

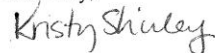
The above referenced human subjects research project has been certified as exempt (category # 2) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, *Protection of Human Subjects*). This determination is based on protocol and consent (received 11/19/2012).

Please also note the following:

- If you wish to continue the research after the expiration, submit a request for recertification several weeks prior to the expiration.
- Conduct the study as described in the approved protocol. If you wish to make changes, obtain approval from the IRB prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
- Notify the IRB promptly of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Report any significant new findings that may affect the risks and benefits to the participants and the IRB.
- Research records may be subject to a random or directed audit at any time to verify compliance with IRB standard operating procedures.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.

Sincerely,



Kristy Shirley, CIP, Research Compliance Administrator

Appendix C

Survey Instrument

I. This section is concerned with learning more about your perceptions of service-learning projects, evidence-based design projects, and the interior design profession.

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
1. Evidence-based design is the process of using results of existing research conducted by interior designers and professionals outside of the interior design industry to create design solutions.					
2. Evidence-based design involves conducting research studies while working on design projects.					
3. Evidence-based design is an effective means for developing and creating interior design solutions.					
4. Evidence-based design is an effective means for developing and creating interior design solutions for people with special needs.					

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
5. Evidence-based design should be used for most commercial interior design projects.					
6. Evidence-based design should be used for some commercial interior design projects.					
7. Evidence-based design solutions are effectively used for specialty commercial interior design projects.					
8. Evidence-based design is not used in the commercial interior design industry.					

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
9. Evidence-based design is used for most residential interior design projects.					
10. Evidence-based design is used for some residential interior design projects.					
11. Residential interior designers use evidence based design exclusively for specialized interior design projects.					

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
12. I am more interested in studio projects involving a real client and space.					
13. I am more interested in studio projects involving a fictional client and space.					
14. I have no interest in service-learning studio projects.					
15. I am more interested in service-learning studio projects than the traditional fictional studio project.					

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
16. Gathering information and conducting research is the same thing.					
17. It is necessary for interior designers to provide evidence or research supporting their interior design solutions to their clients.					
18. The interior design profession does not benefit from interior designers conducting research.					
19. The interior design profession benefits from interior designers conducting research.					

II. Please answer the following questions focused on obtaining information about you.

20. Please indicate your gender.

- ☐ Male
- ☐ Female

21. Please indicate your age:

22. Please specify your race.

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or other Pacific Islander
- ☐ White or Caucasian

23. Please indicate what year in the North Dakota State University Interior Design program you are currently enrolled.

- ☐ 1st year
- ☐ 2nd year
- ☐ 3rd year
- ☐ 4th year

24. Have you taken a course(s) that incorporated evidence-based design?

- ☐ Yes
- ☐ No
- ☐ Don't know

If you selected "Yes" please indicate the name of the course(s):

If you selected "Yes" what type of course(s) did you take? Check all that apply.

- ☐ Studio
- ☐ Lecture
- ☐ Combination Lecture/Studio
- ☐ Other: _____

25. Have you worked previously as a professional interior designer?

- ☐ Yes
- ☐ No
- ☐ Don't know

If you selected "Yes" indicated what type(s) of interior design projects you worked on as a professional interior designer: Check all that apply.

- ☐ Commercial – Office Design
- ☐ Commercial – Healthcare Design
- ☐ Commercial Design
- ☐ Residential Design
- ☐ Other: _____

26. Are you a member of a professional interior design organization:

- ☐ No
- ☐ Yes
- ☐ Don't know

If you selected "Yes" please indicate which organizations you are a member: Please check all that apply.

- ☐ American Society of Interior Designers (ASID)
- ☐ Interior Design Educator's Council (IDEC)
- ☐ International Interior Design Association (IIDA)
- ☐ Interior Designers of Canada (IDC)
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

27. Do you serve as an officer in a student chapter of a professional interior design organization?

- ☐ No
- ☐ Yes
- ☐ Don't know

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