Defining Excellence in Healthcare Design: The Role of Personal Qualities

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DEFINING EXCELLENCE IN HEALTHCARE DESIGN:
THE ROLE OF PERSONAL QUALITIES

By

Roger Vitello

A THESIS

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DEFINING EXCELLENCE IN HEALTHCARE DESIGN:
THE ROLE OF PERSONAL QUALITIES
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Healthcare design has been recognized as a legitimate area of specialization¹, a field. Expertise in the healthcare design and building process is needed. Where and how future healthcare design practitioners will be educated remains a challenge. While the evolution of research-based design for health facilities has grown since the 1980s little is known about how healthcare designers should be educated. ² An understanding of personal qualities a graduating student is expected to possess is important to their education.³ Knowledge about the qualities that determine excellence in healthcare design practice is sparse. By understanding which qualities have been effective, application to other areas such as education can be explored. An educational curriculum based upon reproducing the qualities of excellent healthcare designers through proven educational methods is possible in furthering an understanding of practice. The qualities of excellent healthcare designers underlie this topic and can act as a source of new knowledge.

² Hamilton, “Is Evidence-Based Design a Field?” 99, 100.
³ Sandel, Lenore, ed., Teaching with Care: Cultivating Personal Qualities That Make a Difference.- Newark, Delaware: International Reading Association, 2006
Everett M. Rogers’ Diffusion of Innovations theory provides an underlying reference point for comparison. Growth of the healthcare design field closely tracks this theory’s adoption curve and demand for healthcare design education may follow. Conceptual factors of social system, communication channels, diffusion, innovation, and time, each present in this theory, are examined concerning impact on excellent qualities and healthcare design education.

A unique opportunity exists to focus educational aspects of healthcare design and to set a direction for future design education. Critical evaluation of educational curricula and desired qualities of excellence may allow both educational institutions and the field to understand and select best practices for educating and maximizing potential of future healthcare designers. Researching the qualities necessary to demonstrate excellence forms the seminal idea behind this thesis.
## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Title Page</td>
<td>i</td>
</tr>
<tr>
<td></td>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td></td>
<td>Table of contents</td>
<td>iv</td>
</tr>
<tr>
<td></td>
<td>Illustrations</td>
<td>v</td>
</tr>
<tr>
<td>Chapter-1</td>
<td>INTRODUCTION</td>
<td>6</td>
</tr>
<tr>
<td>Chapter-2</td>
<td>LITERATURE REVIEW</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Definitions</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Applications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medically Related</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Design Related</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Business &amp; Other</td>
<td>39</td>
</tr>
<tr>
<td>Chapter-3</td>
<td>DIFFUSION OF INNOVATIONS (DOI) THEORY</td>
<td>45</td>
</tr>
<tr>
<td>Chapter-4</td>
<td>PROFESSIONAL ORGANIZATIONS</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Healthcare Design</td>
<td></td>
</tr>
<tr>
<td>Chapter-5</td>
<td>EDUCATION</td>
<td>57</td>
</tr>
<tr>
<td>Chapter-6</td>
<td>RESEARCH METHODS</td>
<td>69</td>
</tr>
<tr>
<td>Chapter-7</td>
<td>RESULTS ANALYSIS</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>Qualitative Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Statistical Tests</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>Results and DOI theory</td>
<td>95</td>
</tr>
<tr>
<td>Chapter-8</td>
<td>CONCLUSION</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>Summary of contributions</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>Future research</td>
<td>111</td>
</tr>
<tr>
<td>Chapter-9</td>
<td>BIBLIOGRAPHY</td>
<td>116</td>
</tr>
<tr>
<td>Chapter-10</td>
<td>Appendices</td>
<td>124</td>
</tr>
<tr>
<td>Figures</td>
<td>Illustration</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>1</td>
<td>National healthcare expenditures-cost growth graph</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>National healthcare employment growth-graph</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>National healthcare expenditures compared to G.D.P.-graph</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Competency Framework</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
<td>Competency Domains</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>Qualities Wording Source Path Diagram-p1.</td>
<td>21</td>
</tr>
<tr>
<td>7</td>
<td>Qualities Wording Source Path Diagram-p2.</td>
<td>22</td>
</tr>
<tr>
<td>8</td>
<td>Qualities Wording Source Path Diagram-p3.</td>
<td>23</td>
</tr>
<tr>
<td>9a</td>
<td>Sturmberg medical students competency pyramid diagram (learning process)</td>
<td>25</td>
</tr>
<tr>
<td>9b</td>
<td>Sturmberg portfolio pyramid diagram (hierarchy of activities)</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>Core Competencies for healthcare professionals</td>
<td>29</td>
</tr>
<tr>
<td>11</td>
<td>Diffusion of Innovations-social system distribution.</td>
<td>47</td>
</tr>
<tr>
<td>12</td>
<td>Diffusion of Innovations - take off through saturation</td>
<td>47</td>
</tr>
<tr>
<td>13</td>
<td>Diffusion of Innovations - critical chasm point</td>
<td>47</td>
</tr>
<tr>
<td>14</td>
<td>Healthcare design organizations.</td>
<td>56</td>
</tr>
<tr>
<td>15</td>
<td>Healthcare design education overall diagram</td>
<td>65</td>
</tr>
<tr>
<td>16</td>
<td>Section Enlargement- Education: Basic</td>
<td>66</td>
</tr>
<tr>
<td>17</td>
<td>Section Enlargement- Continuing Education</td>
<td>67</td>
</tr>
<tr>
<td>18</td>
<td>Section Enlargement- Academic Education</td>
<td>68</td>
</tr>
<tr>
<td>19</td>
<td>Research Design Flowchart</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>Survey Question 2 &amp; 3 Comparison</td>
<td>83</td>
</tr>
<tr>
<td>21</td>
<td>Anesthetist Study Initial Category of Responses (Appendix)</td>
<td>125</td>
</tr>
<tr>
<td>22</td>
<td>Linking Emotional Intelligence Competencies to Design Education (Appendix)</td>
<td>126</td>
</tr>
</tbody>
</table>
Chapter 1

Introduction

Researching the qualities necessary to demonstrate excellence in the practice of healthcare design forms the seminal idea behind this thesis. The process of giving form to the healing experience, making judgments in application, and learning how healthcare design practitioners are shaped is intriguing. Remaining current and knowledgeable in all aspects of healthcare design is a complex necessary task amidst the explosion of healthcare information. Evidence-based design (EBD) symbolizes this challenge of remaining current in knowledge for the practitioner. Revolutionary in its potential and necessary if design leadership is not to be abdicated EBD has given healthcare design a scientific basis. An ongoing process, remaining current drives continuing education and underscores the responsibility of maintaining the health, safety and welfare of patients and staff through shaping physical space. Changes in medical equipment technology, delivery models and insurance reimbursement have had major impacts on the size, design and complexity of current healthcare buildings and show no signs of decreasing.

Healthcare design has emerged to become recognized as a specialty field and subset of architecture. For Professor Craig Zimring “the healthcare design “field” wouldn’t exist until university students felt that they could follow a productive course of

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6. 5 Hamilton, “Is Evidence-Based Design a Field?”.98.
study, publish their scholarly papers, and consider it a legitimate and distinct career choice”. Academic recognition requirements as a discipline include structure of knowledge, teaching, research and administration; the Integrated Postsecondary Data System (IPEDS) classifies Architecture and related programs as “Non science” and “Engineering” fields of study.

Expectations that healthcare design could be beautiful did not always exist. Thought in the past to be institutional and restrictive with little room for creativity, hospitals were likened to machines through the use of adjectives such as dehumanizing, neutering and frightening. A lack of new approaches has been used in the past as justification for the reputation of the hospital as among the most uninteresting and rigid of building types. Recent progress has begun to change this perception.

Healthcare design has benefitted from the steady appreciation of public interest in healthcare and well being. Interest in new methods of disease prevention, extending life and wellness, and providing an empathetic caring environment to maximize healing has spread. Figures A, B and C (page 11) illustrate the rapid growth in U.S. healthcare

spending, outpacing growth of the U.S. Gross Domestic Product (GDP), and the rapid growth of jobs in this sector as a percentage of private sector job growth. With a rapidly aging population and the growing conviction that access to healthcare is a basic human right, demand for well designed healthcare facilities has not abated. Continuing demand and the resiliency of the healthcare sector has caught the attention of design firms specializing in other sectors creating14 fiercer competition15 as more firms pursue new streams of revenue in order to survive.16

The designer’s pledge to “protect the health, safety and welfare” of the public17 has taken on additional meaning in the context of healthcare design, addressing all three concerns in an active immediate way, particularly in hospital settings. As the complexity of the healthcare facility, and in particular hospitals, has increased exponentially18, there is no longer a question that specialized expertise in the healthcare design and building process is needed. Design solutions can be viewed as hypotheses or predictions of success often based on education and past experience. Alone they fall short in the face of the complexity of issues faced today and require additional understanding and methods

14 Sara Marberry,,” State of the U.S. healthcare building and design industry.”
15 Author interview with Sheila Elijah Barnwell, managing principal healthcare design, HDR Inc. 11/2010.
16 Andrew Tagel, Institutional jobs help architects weather slump-Lexis Nexis-(9-15-09) from http:
www.allbusiness.com (Accessed on February 16,2011)
for progress to occur. 19

Demonstrated growth in demand for healthcare design and recognition of its importance brings with it a need to secure the future of the field. Where and how future healthcare design practitioners will be educated remains a challenge. Two established university programs specializing in healthcare design have educated a large number of healthcare professionals over the past forty years with a track record of producing many of the leaders of the most prominent healthcare architecture firms in the country. 20 Foundational healthcare design educational programs have largely been the legacy of persistent pioneers who founded them and built their quality and depth. 21 Not all healthcare design professionals have graduated from established programs, some “ending up” in that area of specialization. 22 The design firm practice philosophy that allows operation to be dictated by marketplace demands is a possible partial explanation. Flexibility is valued over specialization in the hope that specialized education can occur when the need occurs, avoiding “prematurely” focusing on a specialty. 23

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22 Quote: David L. Martino from online discussion- “top 5 schools for healthcare architecture”. (4-13-2009)

23 Author interviews with professional healthcare designers during HCD 2010, (October 2010) Orlando Florida concerning how they chose healthcare design as a profession.

24 Quote: Walt Eckenhoff, Eckenhoff Saunders Architects; from online discussion- “top 5 schools for healthcare architecture”. (4-13-2009) from http://www.healthcarefineart.com/2009/04/top-5-schools-for-
The assumption that healthcare design can be learned on the job, “just in time”, without requiring prior preparation may be mistaken. Whether this approach is effective is part of a separate future discussion. Derek Parker, a prominent healthcare designer asserts that “the feedback loop is slow in architecture”. Learning from experience takes a long time in architecture. How does healthcare design specialized education occur once maturity and passion have found each other? Passion can be defined as “having a particular glow or enthusiasm”. This thesis seeks to examine those areas of practice that are difference makers and reflect personal qualities like passion.

Passion must be integrated with wisdom and learning. Wisdom and qualities of excellent healthcare design practitioners can become a contributing factor for academic educational programs. A way to accelerate the feedback loop that is so slow in architecture and make it count, ensuring a legacy for this field’s pioneers. Through understanding what these qualities are, goals and ability to measure outcomes of healthcare design education may be determined.

A general review of relevant literature will occur next followed by divisions dedicated to professional and educational aspects of literature, the primary future and further development focus of this thesis. Research methods from the survey, a discussion


of what they mean and how they might be applicable to current practice and future healthcare design research will follow. In conclusion findings will be summarized and the challenges of further development set forth.
Figure 1. Enormous growth in national healthcare expenditures over the last forty years has fueled the growth of the healthcare design field. The growth in national health expenditures 1970-2004, Source: http://aurametrix.blogspot.com/2010/01/counting-health-care-costs.html (accessed January 24, 2011)

Figure 2. Growth in employment by healthcare sector has created increased demand for healthcare facilities and specialized healthcare design. Opportunities for Healthcare job growth as share of private sector 1981-2007

Figure 3. Healthcare expenditures as compared to gross domestic product benchmark growth as a measure of variance. Healthcare spending outpaces gross domestic product growth 1960-2006.
Chapter 2

Literature Review

Healthcare design as a field is young enough that few pieces of literature exist concerning aspects of its practice. Architecture and interior design possess literature concerning practice and management but little research concerning qualities of excellence. In response, this thesis investigation has shifted to examine qualities of excellence operational within other fields related to healthcare design. This strategy allows the topic to be “surrounded” and approached from the perimeter while creating beginning research. Contributions from medically related fields, design related fields, and business and other fields are explored in pursuit of a better understanding of qualities of excellence in different contexts. The most promising qualities will be selected and included in the survey instrument for evaluation by practitioners based upon professional experiences.

Definitions

Definitions are critical to understanding parameters of what is being investigated and articulating what is pertinent to this investigation. Different definitions exist and the original definition of a term may have changed with time. Without definitions it is possible to use the same words but be operating with completely different understandings. Good definitions guard against careless handling of facts and open doors to clarity and understanding.
The terms being considered are defined as critical to **Excellence.** Superiority or eminence is a synonym for excellence cited in the dictionary.28

The quality of being excellent; state of possessing good qualities in an eminent degree; exalted merit; superiority in virtue (Merriam-Webster)

Peters and Waterman’s groundbreaking book “In search of excellence: Lessons from America’s Best Run Companies” is about the cause of the Japanese economic miracle and focuses on the qualities of business models in the US and Japan.29 This thesis is interested in personal qualities rather than byproducts of a business system or approaches as Peters and Waterman’s book explores, however the goal of understanding superior performance remains the same. Personal qualities of excellent healthcare designers, attributes that differentiate the best designers from the rest are the objective of this study.

The Merriam-Webster medical dictionary defines ‘qualities’ as: “a special or distinguishing attribute”.30 Some attributes may be considered public, or common, while others are considered personal, less visible, and are the byproducts of individual character. Qualities determine how we behave in different contexts.

Analysis is less important than perception and how thoughts are organized in the mind. Quality of relationships increases while individual traits decrease. Emphasis on status symbols, and status changes. Deeper talents, spanning reason and emotion become

28 Dictionary.com  http://dictionary.reference.com/browse/excellence definition of
30 Definition of qualities; http://www.merriam-webster.com/medical/qualities -.
visible. These behaviors are characterized by the following quality abilities:

- **Attunement**: the ability to enter other minds and learn what they have to offer.
- **Equipoise**: the ability to serenely monitor the movements of one’s own mind and correct for biases and shortcomings.
- **Metis**: the ability to see patterns in the world and derive the essence from complex situations.
- **Sympathy**: the ability to fall into a rhythm with those around you and thrive in groups.
- **Limerence**: A motivation. The conscious mind hungers for money and success, but the unconscious mind hungers for moments of transcendence.

Competencies can be examined as “hard” and “soft”. Soft competencies refer to characteristics such as creativity and sensitivity, prevalent in personal qualities behind behavior. Hard competencies such as the ability to keep adequate records, or punctuality are different. Both are important and often reflect different mindsets. Often “hard” competencies are considered more universal more easily measured (as in performance) and are seen when employers describe qualities they look for in prospective employees. The way that qualities are organized is important to understanding them and how they operate.

In the book "Into Thin Air," there is a moment when the climber on Mt. Everest contemplates death and wonders how he arrived at this awful and dangerous position. Looking back, he realizes it was not one big mistake in judgment. Instead, it was ten small decisions seemingly inconsequential along the way. In retrospect, these led the climber into a precarious and nearly fatal situation. Many of the qualities examined will be obvious to the reader as they operate “behind the scenes” and yet are at least of equal importance to more obvious ones.

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This is important as at some point the cumulative impact of a series of wrong decisions makes it virtually impossible to regain one’s bearings. This represents the potential impact of following “hard” alone and ignoring the “soft” qualities. It’s a case of being out of balance and not knowing.

The nature of objective and subjective knowledge has long troubled the design professions. Paul Eschelman, an interior design educator, captured this dichotomy writing” how he sensed a smoldering tension between the creative/subjective and the rational/objectives sides of design… as if there are two separate and independent schools of thought vying for dominance, rather than two complimentary dimensions of the same process seeking balance.”34 This thesis seeks to contribute to research on what contributes to a balanced sense of identity by examining qualities of excellence within healthcare design including objective and subjective knowledge. The pairing of objective knowledge with subjective knowledge enables designers to deal with complex and poorly defined situations, allowing them to “make sense of a situation that initially makes no sense”.35 Healthcare design by nature confronts this duality in its role as an enabler of the scientific and the intuitive; both are necessary for healing to occur.

An alternate way of examining levels of competence is to differentiate between “threshold” and “high performance” competencies. Threshold or “entry level” competencies are not associated with superior performance. High performance

competencies are in contrast, behaviors associated with individuals who perform at a superior level; the concern of this thesis.\textsuperscript{36} The view of this thesis is that lists of healthcare design competence / high performance attributes cannot be measured in isolation but must be considered as a whole due to their interdependence. The use of comparative ranking questions in the survey instrument is an attempt to recapture the interdependent relationship aspect of healthcare design in the survey method. Competency framework and domains diagrams for healthcare design (Figures 4 and 5, page 18) illustrate the parameters that frame professional healthcare design practice from an interdisciplinary perspective.

\textit{Profound differences exist} in the way healthcare and design professionals view problems, organize their thinking, and address solutions.\textsuperscript{37} Differences must be addressed if joint solutions are to occur. Among the necessary qualities and skills are” process and outcome indicators, being \underline{innovative}, \underline{functional}, and \underline{flexible”}. “Over time, it was learned that there are as many layers of nuance and complex meaning in the language of design as there are in medical concepts such as reality of life and safety in healthcare”\textsuperscript{38}. Interdisciplinary effort is clearly the direction of the future, as no one has all the answers, problems are complex and synergy produces innovation. With this come challenges and the complexity of working with diverse groups. The \textit{ability to manage complexity} may be an important quality for healthcare designers.

\textsuperscript{36} David Robotham, and Richard Jubb,” Competencies: measuring the unmeasurable”, \textit{Management Development Review}, vol.9, issue 5 (1996), 27.


\textsuperscript{38} G. Lamb, and J. Connor , M. Ossmann.”Nursing’s Contribution to Innovative Hospital Design,”427.
Visioning can transform ways of seeing, leading to a common language and understanding of what the future may involve. Openness towards considering possible innovations follows. Machiavelli in “The Prince” said of being an innovator, “nothing is more difficult”. Being highly creative and being able to see “the big picture”, essential to having a vision, may be an important quality for healthcare designers. Florence Nightingale – ‘a paradigm pioneer’ urged her society to look at medical care in a revolutionary way. Paradigm comes from the Greek language meaning “pattern” or “example”. The ability to create paradigms and to read “patterns” may be an important quality for a healthcare designer.

Characteristics of practice seen to not qualify for consideration as being excellent included keeping adequate records (important but basic) as would punctuality. Important attributes can be seen as enablers for other characteristics, essential and part of their interdependent nature, such as communication and leadership skills.

A qualitatively different process is necessary to produce excellence. Musicians who excel may put in fewer hours of practice but make their practice more challenging to increase opportunities for personal development. Recognizing and understanding this opportunity is a key differentiator in becoming excellent. The academic healthcare design

[^40]: Nicolo Machiavelli, The Prince (transl. W.K. Marriott) (Charleston S.C., Create space, 2010), 41
[^41]: M. Millenson, Demanding medical Excellence ,Chicago, U. Chicago Press, 1997), 95
studio environment has potential to create a similar “incubator-like” appropriate excellence growth setting.

The path of descriptions of attributes from the literature to use in the survey, is shown in the Qualities Source Path Diagram (Illustrations 6, 7 and 8 on pages 21, 22, 23). This illustrates the fields the attributes were drawn from, how often they appeared and where (at times bridging different fields), and what type of thesis survey question they were applied to. The process of survey preparation qualities wording selection is explained in this diagram.

The stakes in healthcare design are high as they affect everyone at their most vulnerable. The focus of this section is to examine qualities individually and through emergence from description of needs, assess applicability to healthcare design.
Figure 6. Qualities Source Path Diagram Page-1. Traces path of attribute wording from literature review, notes if occurs more than once and where it was placed in the survey divided by question type. Source: The Author- thesis- Healthcare design education (unpublished) (2011)
Figure 7. Qualities Source Path Diagram Page-1. Traces path of attribute wording from literature review, notes if occurs more than once and where it was placed in the survey divided by question type. Source: The Author- thesis- Healthcare design education (unpublished) (2011)
**Figure 8.** Qualities Source Path Diagram Page-1. Traces path of attribute wording from literature review, notes if it occurs more than once and where it was placed in the survey divided by question type. Source: The Author- thesis- Healthcare design education (unpublished) (2011)
This thesis is about qualities (distinguishing attributes) and excellence (superior virtues) in examining high performance competencies. Qualities have a two partite nature, hard and soft, objective and subjective, resulting in a need for balance. Visioning and innovation are qualities which when present in an interdisciplinary setting set the stage for development of new paradigms. Medicine in its search for continual improvement has examined qualities attempting to explain best practices for educating health providers. Health fields share common concerns with healthcare design and represent client and patient (or recipient) aspects. Much of medicine’s learning may be directly applicable to healthcare design practice. The Sturmberg pyramid diagrams (Illustrations 9a and 9b on page 25) illustrate learning progression and hierarchy of activities for medical students as medically related areas are examined.

**Medically-Related.**

Excellence assumes different guises in different contexts. In the area of medicine, closely aligned with healthcare design, the term ‘competency’ is frequently used in place of excellence. Rarely is the term ‘excellence’ used to describe a practitioner attribute.

Smith et al discuss how postgraduate medical education in the United Kingdom (UK) has been influenced by ‘the competency movement’ over the last ten to fifteen years. In 2008 a report entitled ‘Aspiring to Excellence’ was released. Commissioned by the UK Department of Health (DOH) this report was critical of post-modern competency-based education being used and recommended encouraging excellence in future physicians.43

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Figure 9a. J.P. Sturmberg Medical Students Competence Pyramid Diagram (learning process).
Figure 9b. Portfolio components diagram (hierarchy of activities)
‘Competency’ would appear to imply a different and lesser ‘entry level’ standard of meaning; decidedly less than excellent. Most indicators prior to release of the 2008 UK DOH Report imply qualification to become a physician requires a high enough practice standard that to be considered competent is equivalent to being considered excellent. The nature of this thesis application allows use of medical literature in pursuit of qualities of excellence for application in healthcare design. While not all aspects of competence or excellence for physicians carry over to designers there are enough similarities to warrant exploration. In addition this research provides insight into the attributes of the primary healthcare provider, the primary end user of the healthcare design product.

“Competence is a conditional construct, i.e., with the only indicator of operating competently being behavior which must be observed”.

Epstein and Hundert view performance as being directly measurable and competence as an inferred quality.

Developmental and similar to skill, both the Accreditation Council for Graduate Medical Education (ACGME) and American Board of Medical Specialists (ABMS), have agreed on six general competencies—“Patient care, Medical knowledge, Practice-based learning and improvement, Interpersonal and communication skills, Professionalism and system-based practice”.

What follows is a description of these underlying qualities.

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41 David Robotham, and Richard Jubb, “Competencies: measuring the unmeasurable”, 27
42 R.M. Epstein, and E.M. Hundert, “Defining and assessing professional competence”, Journal of the American Medical Association 263 (9), 231
43 D.C. Leach, “Competence is a habit” Journal of the American Medical Association., 287 (2), 243
“Competence depends upon habits of the mind, including attentiveness, critical curiosity, self-awareness, presence, and being willing to recognize and correct errors”.

47Professional competence depends upon context. Polanyi argues competence is defined by what is difficult to describe conversationally or in written form, rather than by explicit knowledge. Informed use of rules of thumb, intuition, and pattern recognition are all examples of this definition.48 Schon argues that the ability to manage uncertain problems, live with uncertainty, and make decisions with less information than necessary are qualities of professional competence.49 “Habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values and reflection in daily practice in defining and assessing physician competence”.50 All of these qualities are applicable within healthcare design and may distinguish excellent practice.

Competence or excellence develops over time in a similar way to a habit, through nurture and reflection on experiences by the practitioner. By organizing competence in stages, depth and breadth can be accounted for and developmental nature reflected. Progressive growth stages are “Novice, Advanced beginner, Competent, Proficient, Expert and more recently, Master, moving closer to the reality of how physicians learn through their apprenticeship model”.51 This organization differs from what exists within healthcare design however a similar model might be worthy of consideration so closely

47 R.M. Epstein, and E.M. Hundert, “Defining and Assessing professional competence”.227
48 M. Polanyi, 1974 Personal Knowledge: Towards a Post-Critical Philosophy, (Chicago, U. Chicago Press), 4
49 Donald, Schon, The Reflective Practitioner-How Professionals think in Action, 91
50 D.C. Leach, “Competence is a habit”, 243
51 D.C. Leach, “Competence is a habit”, 243
connected are health and healthcare design. This model might also transfer well to an educational setting. In addition to representing a particular stage; competency represents an overriding process, the goal of which is excellence.

Dreyfus’ model moves from advanced beginner to competent growth moving from rule-based behaviors to context-based behaviors. Practitioners are forced to select a perspective and cannot hedge. Qualities are formed through learning experiences and behavioral choices. Learning and development involves making mistakes, a particularly sensitive topic among physicians due to high stakes including liability. Detachment and creation of new rules create an increasingly thick rule book delaying development. Dreyfus’ path does not permit detachment and requires remaining present in the circumstance experiencing the pain of those affected. This is the path of growth towards excellence. “Feeling bad about mistakes and good about correct decisions provides needed intimacy with context that leads to learning about the context and not just the rules”. Learning in this way develops accurate pattern recognition. Accountability may be an important quality for an excellent healthcare designer. Rules transfer from a rule book by becoming subliminal and integrated with intuition. Knowledge that is difficult to describe while talking or in written form yet accurate, emerges, an ongoing characteristic of qualities.

Minimum competency is clearly not a standard of excellence. The term is used in two different contexts within medical literature. As a description of qualities to be

52 D.C. Leach, “Competence is a habit”, 244
53 D.C. Leach, “Competence is a habit”, 244
54 D.C. Leach, “Competence is a habit”, 244
emulated and as a description of a mid level of professional accomplishment. The latter is not a standard of excellence as is sought for healthcare design. However in the former context a higher standard is implied that can lead to adoption of some qualities for use in the thesis survey.

Relationship among core competencies for health professionals is illustrated (Figure 10, page 29) where three major groups of activities are bounded by “work in interdisciplinary teams”. That excellence was the descriptor used from an interdisciplinary group engaged in a healthcare design study is indicative of the ability of this term to cross boundaries and be universally recognized.

The potential benefits of a patient-centered approach to health care are impressive in almost every area of consideration. Sharing information with patients empowers them to make clear decisions concerning their health and changes them from passive recipients medicine is the practice method of the future. Healthcare design is a necessary participant
in the to active participants in their medical care. The implication is that participatory medical process. Michael Ebersold has said “the key word is humility of the physician”.56

**Self-awareness** enables “difficult to explain knowledge” tapped from personal emotions, experience, and perceptions to become available to the physician. For example, a physician’s ability to observe a patient’s walk from a distance and deduce a possible diagnosis. A healthcare designer’s observation that a curved patient corridor presents a problem for the patient unable to see their destination and less inclined to view walking there as achievable, is another example. This “personal” or “difficult to explain” knowledge of patients, syndromes, and relationships, can complement traditional learning and be considered fundamental to clinical competence.57 **Cognitive and emotional self-awareness** is necessary to help physicians question, seek out new information, and adjust for their own biases,58 as it would for designers. **Identity formation** and self-awareness are necessary for this type of growth to happen. Most medical students don’t develop this until residency, 59 and designers until graduation or maturity occurs, a lengthy process.

This thesis seeks to examine those areas of practice that are difference makers and reflect personal qualities such as **personal sensitivity**. “Difficult to explain” knowledge is often

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56 M. Millenson, *Demanding Medical Excellence: Doctors and Accountability in the Information Age*, 246, 265
58 R.M. Epstein, and E.M. Hundert, “Defining and Assessing professional competence”,227
what distinguishes excellent healthcare designers from their peers, difficult to identify yet discernable. This knowledge may be a marker for excellence in healthcare design.

Healing draws on physicians’ “humanistic” qualities of integrity, respect, and compassion in doctor-patient relationships. Novack et al state that “It is easier to train technicians than to train healers. In teaching students it is important to first focus on the processes of healing, and on the healers themselves”.60 These less tangible aspects contrast with a “rule book” approach which impedes healing through the healer. Having basic tools is only the beginning of the journey for a designer. Tenacity and persistence that come from commitment to a vision are necessary when practices change. Change often occurs within an atmosphere of opposition and robust interventions are at times necessary to cause real consideration to occur.61 Part of the healthcare designer brief is often to advocate for organizational change on behalf of a client while acting as an outsider. This thesis seeks to examine those areas of practice that are difference makers and reflect personal qualities perseverance and anticipating change.

Most nurses and healthcare professionals learn about hospital and healthcare design through the process of trial and error.62 The willingness to experiment and fail in order to learn may be an important quality for healthcare designers.

A recent study in Anesthesia was begun in response to a charge from the UK DOH to focus on excellence rather than competency in medical practice. Excellence in clinical work (or basic fundamental procedure) was seen as a pre-requisite for excellence of any other sort. This is similar to the need to first become a competent designer before practicing healthcare design in an excellent way; this thesis concern is with what follows after pre-requisites, not with pre-requisites. Second, excellence was seen to be context-specific (anesthesia). Excellent healthcare design works best within the world of health, its natural setting; excellence may be lost if taken outside that context. Third, excellence may not occur in every area of a practitioner’s work due to differing opportunities and contexts. Excellence in hospital surgical ward design may not transfer well to designing a hospice due to the different context. Fourth, excellence is dynamic, developing over time but also changing focus with the seasons of a practitioner’s career. Passing on qualities of excellence is more than leaving behind a legacy; it is a career long endeavor. A similar application is when design excellence is able to develop and move in conjunction with projects and differing opportunities and not confined to a specific area. Lastly, a serious flaw in any aspect of a practitioner’s work was seen to eliminate the possibility of excellence. Fundamental consistency is important in considering the entire body of work. Lack of attention to design detail might affect any project type undertaken in any aspect, undermining execution and the possibility of excellence.

_Habitual concentration_ is seen as being helpful in developing qualities of excellence.” A habit is something you do without thinking. Habitual actions are far less

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energy consuming”. Sixty-four Seven characteristics indicative of an excellent nurse and potential habits were: Compassion, Ownership, Partnership, Dignity, Integrity, Knowledge, and Communication. Encouragement was also recognized as an important part of becoming excellent. Sixty-five Kindness, compassion, taking ownership, integrity, and other attributes were considered essential at the bedside. Sixty-six Experiential aspects were seen as essential to understanding how to serve and design best possible settings for patient bedside service to occur. Sixty-seven Healthcare designers must understand and if possible experience how service occurs to be able to design supportive and possibly transcendent design settings. Synthesis was defined as being, seeing the big picture and crossing boundaries. Not just logic but also empathy; the ability to understand, forge relationships, care for others; not just accumulation but also meaning. Sixty-eight Empathy as a means to understanding may be an important quality for healthcare designers.

Healthcare consulting groups can occur in-house or independently and are comprised primarily of non-architects such as former hospital CEOs, nurses and biotech personnel. Specialist consulting firms partner with other size firms depending upon project requirements. Consultants specialize in determining needs and direction. Sixty-nine bridging the divide between health clients and designers through understanding the

Sixty-five Christine M. Tomes, “ Developing Characteristics of Nursing Excellence”, Critical Care Nurse, Volume 28, Number 4, American association of critical care nurses (2008), 78-80
Sixty-six Christine M. Tomes, “Developing Characteristics of Nursing Excellence”, 78-80
language of public health. The ability to speak a Client’s professional “language”, the language of public health, is often an overlooked ingredient in understanding the needs of healthcare organizations.\textsuperscript{70} Thinking similarly to and understanding another healthcare profession may be a differentiator for healthcare designers. Understanding infection control processes is an underlying fundamental particular to healthcare design, and the language of public health\textsuperscript{71} extending to all aspects of healthcare settings, yet a separate field in origin.

Achievement is likely to depend on the successful integration of a healthcare practitioner’s personal qualities and the environment in which they work. The entire community has a part to play in the encouragement of excellence\textsuperscript{72}; it is not a solitary endeavor.

Design related fields are closest in methodology of practice to healthcare design. The ability to see beyond the obvious and piece together a coherent whole can be a differentiating quality for a healthcare designer. Creativity, imagination, and ultimately innovation are attributes that often come from practice outside of health in the person of healthcare designers.

Design- Related.

\textsuperscript{70} Author interview with Robert Douglass, former principal of Robert Douglass Associates, a healthcare strategic and facility planning consulting firm. November, 2010.


\textsuperscript{72} A.F. Smith, and R. Glavin and J.D. Greaves, “Defining excellence in anesthesia: the role of personal qualities and practice environment”\textsuperscript{42}
“Hard” competencies are dominant in applied arts such as design. “Soft” competencies involving emotions and intuition are confined to encouraging creativity. Designers use subjective artistic expression and apply scientific principles in decision making. Yet a noticeable disdain for the emotional, intuitive, and subjective as valid sources of knowledge exists within design, public and academic areas. Pink notes that functional and economical design seems insufficient; the beautiful, whimsical and emotionally engaging are becoming crucial in attracting interest.

Graphic design influences applicable for consideration as qualities for healthcare designers include:

- Wide and deep: meta-disciplinary study and practice. Diverse contexts, work collaboratively.
- Expanded scope: scale and complexity of design problems.
- Targeted messages: a better understanding of a variety of cultures, sensitivity toward cultural perspectives and empathy.
- Sharing experiences: a co-creation model. Designers must change their idea of customers/users to co-creators (mass customization) to coincide with the rise in transparency of personal and professional lives (social networking, blogging, etc.)
- Responsible outcomes: focusing on sustainability limited resources

Designers are seen to be preoccupied with the design of things rather than human experience. The patient experience is becoming a critical factor in healthcare settings as patients have the choice of where they go for medical procedures. Design is moving beyond the disciplines that historically defined it, requiring designers to cross disciplines

73 D. Schon, The reflective practitioner: How professionals think in action,
74 Daniel H. Pink, A Whole New Mind: moving from the information age to the conceptual age, 65
75 AIGA. This essay originally appeared in the 2010 AIGA|Aquent Survey of Design Salaries (accessed February 21, 2011)
76 David Wang, In.d. “Content, praxial and cross cultural interdisciplinarity in design education”. Unpublished paper. Interdisciplinary
in response, relating to the trend towards interdisciplinary understanding. Predictions are that designers will spend more time following not their intuition but rather a sense of empathy to the ultimate client. This is similar to having an understanding of patient health experience such as staying overnight in a hospital prior to designing patient rooms. Mockups and evaluating consequences of what is designed with others before production and then refining options⁷⁷ is a process commonly used in refining patient room design and confirming mutual understanding through shared experience.

Canter cites architects as the one major professional group in the design processes who can, and frequently do, put the user’s experience first (as embedded in codes of practice). He qualifies this however by saying that scientific support for the human value of architecture is lacking.⁷⁸ Evolving and emerging evidence drives major design decisions causing re-examination of propositions and adds complexity. “Continuous change is the context for most healthcare organizations as they respond to technological and clinical advances, economic and reimbursement constraints, regulatory limits, consumerism, demographic pressure, unsatisfied patients and families, recruiting and retention of skilled personnel, and the crisis of safety and quality”.⁷⁹ Canter (1977) “if architects do not accept the current challenge there will be a continuing erosion of their role by other design groups: civil engineers, project managers,’ client groups’, and their

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⁷⁷ AIGA. Ric Grefe, Executive Director of AIGA on the Quickly Changing Business of Design Interview by Adam Glickman on 09.30.10(accessed February 21, 2011)
⁷⁸ D. Canter, “Why Architecture is necessary”, 261
ilk”, and this prediction has come to pass with responsibilities defined by others. Without knowledge constructs it can call its own, activities such as thinking, planning, creating and producing artifacts remain unanchored and unprotected. This lack of knowledge leaves design subject to definition by others. Whether this will occur in healthcare design is a topic for separate exploration.

When architecture is left out of the design, so are people. The design of a facility is a social process. “To talk about culture as an ‘it’ is absurd: culture is ‘us’, involving personal change. Based on concealed notions and shared beliefs, much of culture is unstated; not dissimilar to the qualities of excellence in healthcare design being examined.

As long as lack of reference to existing evidence occurs, the built environment can be set aside as lacking human relevance through lack of science. Evidence-based design answers the concern for a lack of existing evidence within the healthcare design context.

The Center for Health Design (CHD) describes EBD as: “the process of basing decisions about the built environment on credible research to achieve the best possible outcomes.”

80 D. Canter, “Why Architecture is necessary”, 261
83 D. Canter, “Why Architecture is necessary”, 261
87 Center for Health Design, EDAC section; “What is EBD?” http://edac.healthdesign.org/about.php (Accessed March 5, 2011)
Intuitive beliefs are confirmed by proven research creating a moment of realization for the designer which expands the potential and boundaries of where they look for sources.\textsuperscript{88} EBD principles have addressed the challenge of implementing healing in a physical setting and the implication that with shorter hospital stays come reduced costs through application.\textsuperscript{89} Objective techniques such as observation, empirical analysis, and verification are valuable tools for design, particularly healthcare design where productivity and healing can be measured and used as proof of value to clients. Medicine’s experimental heritage makes healthcare much more receptive to EBD. Limitations include the need to determine methodological soundness in studies and research knowledge for assessment.\textsuperscript{90} EBD may start with “rules of thumb” or “hunches” but a rigorous path must be followed before application occurs. Isolated comments can be taken out of context, applied injudiciously, undermining EBD process reputation.\textsuperscript{91} EBD’s exclusive reliance on pre-existing verifiable proof is not considered sufficient to cover the full generative, creative process of design,\textsuperscript{92} and it is a slow process. Balance comes from “Not all or even most decisions will be ideally evidence based” and that “good healthcare projects … contain the magic of the human spirit, infused with the

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\textsuperscript{88} D.K. Hamilton, “Is Evidence-Based Design a Field?”, 97, 98. \\
\textsuperscript{91} Jill, Pable, “Interior Design Identity in the Crossfire: A Call for Renewed Balance in Subjective and Objective Ways of Knowing”: 4
\end{flushleft}
sacred, the inspired, the grand, the intimate and full richness of life.” 93

Interior Designers use intuitive, subjective knowledge in their work process but seem uncertain in championing its value. Owing to the difficulty in explaining how it works the value of the intuitive is frequently discounted. 94 Interior Decorators in contrast revel in the intuitive, subjective knowledge, or “tricks of the trade” in dispensing their services.

Ornamental aspects of interior design are effective counterpoints to antiseptic interiors requiring no introduction to patients. The public piano advocated by planetree is an example of component personalization possible in a healthcare facility. The patient and family need to feel comfortable and as close to being as “at home” as possible in a healthcare setting. Often ornamental and decorative approaches carry a symbology of personalization that is difficult to counter with objective less personal approaches. 95

Business and Other covers attributes that while less directly related to healthcare design practice are nevertheless important. Healthcare design is by definition a professional business.

Business & Other

Behaviors successful in one profession may not translate well to another. “While it is possible to identify elements of “effective performance” from observing practicing

94 Jill, Pable, “Interior Design Identity in the Crossfire: A Call for Renewed Balance in Subjective and Objective Ways of Knowing”: 6
95 Jill, Pable, “Interior Design Identity in the Crossfire: A Call for Renewed Balance in Subjective and Objective Ways of Knowing”: 8
managers, it is not possible to identify a complete blueprint … that will cover all managers.”  

Much of the process of understanding starts with comparative observation, however there are hidden aspects. Survey question responses in this thesis rely heavily on respondents’ observations and interpretation skills (as seen in others) in identifying and ranking excellence qualities within healthcare design. Survey sample results can begin to provide guidance towards “a complete blueprint” due to variety of respondents and range of questions.

Less about job description and more about the way the job is done is what defines attributes in medicine and can be applied in healthcare design. A parallel implication is that skills or competencies can be learned. Robotham and Jubb are skeptical that “more deep seated personal qualities, such as motivation, are trainable and therefore transferable to individuals”. Competencies gained through experience are specialized and context based through their workplace link.

**Trust** and being sold on a leader’s vision are essentials of U.S. Army leadership. A good sense of character composed of beliefs, values, skills, and traits is one way to build trust. Only recently have some of the intangibles in medicine, such as **trust and professionalism** been able to be captured and measured. Recent neurobiological research

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96 David Robotham, and Richard Jubb, “Competencies: measuring the unmeasurable”, 25
97 David Robotham, and Richard Jubb, “Competencies: measuring the unmeasurable”, 27
98 David Robotham, and Richard Jubb, “Competencies: measuring the unmeasurable”, 27
99 David Robotham, and Richard Jubb, “Competencies: measuring the unmeasurable”, 27
has pointed to the central role of the emotions in all judgment and decision making.\textsuperscript{101}

\textit{Integrity} is necessary for trust to follow and may be an important quality for a healthcare designer.

In Lamb et al, an interdisciplinary group of experts approaching healthcare design problems together used the term ‘excellence’ rather than ‘competency’. Clinical setting conclusions were as follows. Knowledge and skills, demonstrated through exceptional performance, were essential, but incomplete. Personal qualities and functions of personality were the missing ingredient, and considered as essential as knowledge and skills. Seeking to isolate the defining characteristic of excellence, the group agreed on the ongoing \textit{urge to seek out challenges and learn skills from them}\textsuperscript{102}; also cited as the single defining characteristic of excellence in the separate unrelated UK Excellence in Anesthesia study.\textsuperscript{103} Other high-ranking characteristics included \textit{clinical skills, interest in teaching, conscientiousness, innovation/originality, communication skills, and good patient relationships}. Applied rather than cerebral knowledge was thought to be a key ingredient behind many of the most important categories.\textsuperscript{104}

\textit{Communication} is the most common failure in transforming culture. Communication involves \textit{listening to all stakeholders}, identifying points of view while convincing stakeholders their narrative is heard and appreciated.\textsuperscript{105}

\textsuperscript{101} R.M. Epstein, and E.M. Hundert, “Defining and Assessing professional competence”, 228
\textsuperscript{102} G. Lamb, and C. Zimring, J. Chuzi, D. Dutcher, “Designing better healthcare environments: Interprofessional competencies in healthcare design,” 428
\textsuperscript{104} G. Lamb, and J. Connor, M. Ossmann."Nursing’s Contribution to Innovative Hospital Design, ": 428
\textsuperscript{105} D. Kirk Hamilton, and Robin D. Orr, W. Ellen Raboin, “Culture change and Facility Design: A Model
an enabling interdependent attribute for other qualities.\textsuperscript{106} Too often a patient’s story is
depreciated in administering a rushed just-the-facts approach to patient care; an example
of communication gone awry.\textsuperscript{107} Healthcare design can involve understanding
community needs and presenting solutions effectively.

Anxiety concerning the impact of change is natural; \textit{open dialogue} can be used to
hear and correct misperceptions. \textit{Learning, sharing and probing} is a model approach.\textsuperscript{108}

“Learning to \textit{think more systematically} about care processes [including] redesigning
physical space…are key steps in changing the system”.\textsuperscript{109} Building a new facility alone is
not a magic solution that convinces staff to change attitudes and core routines.\textsuperscript{110}

Healthcare design springs from an understanding of the care processes needing to be
carried out in physical spaces, and how the current system works. Out of this
understanding comes knowledge as to what is possible and what might require change.

“It is a familiar failing of visionaries and people who live in the realm of ideas and issues that they
are not inclined to soil their hands with the nuts and bolts of organization or social functioning.
Every leader need some grasp of \textit{how to work the system}”. (Gardner, 1986 p. N.A.)\textsuperscript{111}

\textit{Knowing how to work the system} may be a critical quality for healthcare designers.

\textsuperscript{106} A.F. Smith, and R. Glavin and J.D Greaves, \textit{Defining excellence in anesthesia: the role of personal qualities and practice environment}, 41
\textsuperscript{107} Daniel H., Pink. ‘\textit{A Whole New Mind: moving from the information age to the conceptual age}’ (NY, NY, Riverhead Books (Penguin Group), 2005). Comment by Dr. Jack Coulehan, Stony Brook U. Hospital):109,110
\textsuperscript{111} John Gardner, \textit{leadership papers}, (N.A., independent Sector, 1986)
Social work practitioners are said to need to possess a combination of intellectual knowledge, practice skills, values, and personal qualities.\textsuperscript{112} The success of social workers may depend not on academic factors, but rather on qualities” under the vague name of personality”.\textsuperscript{113} Qualities sought by MSW programs in the US included maturity, stability, warmth, empathy, leadership, interpersonal effectiveness, self-awareness, ethics, honesty, integrity, non-judgment, tolerance, acceptance, openness, adaptability, creativity, analytical thinking, and critical thinking as desirable.\textsuperscript{114} Many of these qualities may be desirable for healthcare designers though tolerance, acceptance, and openness may be more particular to social work.

The Council for the Advancement of Standards (CAS) has developed a listing of qualities. The following are possibly applicable to excellent healthcare designers. The ability to teach or pass on information effectively may be important for excellent healthcare design practitioners.

- Possesses appropriate knowledge of relevant theories, literature, and philosophies on which to base informed professional practice
- Knows values, historical context, and current issues of one’s profession
- Understands relevant legal issues
- Thinks critically about complex issues
- Works collaboratively
- Is trustworthy and maintains confidentiality
- Models effective leadership
- Behaves in ways that reflect integrity, responsibility, honesty, and with accurate representation of self, others, and program
- Intentionally employs self reflection to improve practice and gain insight
- Stays professionally current by reading literature, building skills, attending conferences, enhancing technological literacy, and engaging in other professional development activities

\textsuperscript{112} Jill Gibbons, Miles Bore, Don Munro, David Powis, “Using Personal Quality Assessment for Selection of Social Work Students”, \textit{Australian Social Work} Vol. 60, No.2, (June 2007): 211
Assumes proper accountability for individual and organizational mistakes. Within the field of medicine, accountability is fast becoming the reality inside a profession known for its defensiveness. The Association of American Colleges and Universities identified “A sense of values: the ability to make choices and accept responsibility for them,” as one of eight essential competencies for which higher education should assume responsibility. In a service field such as healthcare design being able to explain what has been done and why is crucial to the client relationship.

In reviewing medically-related, design–related and business & other areas, qualities have been identified with potential application to excellence in practice of healthcare design. Terminology may differ, as in whether “competency” shares the same meaning as “excellence” in the medical context. Nevertheless there are many qualities from these fields with potential application to healthcare design. Whether considered “hard” or “soft”, “threshold” or “high performance” competencies, each has a place; however this thesis’ concern is with excellence and not minimum competence.

“Our skills can save a life, but so can our character”. This thesis seeks to define those life-saving elements by means of identifying qualities of excellence in healthcare design. A description of the theoretical basis for Rogers’ Diffusion of Innovations theory follows.

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116 M. Millenson, *Demanding medical Excellence*, 10
118 Christine M. Tomes, “Developing Characteristics of Nursing Excellence”, 58
Chapter 3

Diffusion of innovations theory

Everett M. Rogers’ diffusion of innovations theory provides an underlying reference point for this thesis. Healthcare has grown rapidly as an industry committed to the wellbeing of Americans. Medical innovations have occurred and been readily adopted with little concern for cost. Popular culture has embraced the desire to provide healthcare for all while population continues to grow due to increases in longevity. These trends have provided growth in the need for healthcare facilities and design. As the challenge of healthcare affordability confronts the United States it is important to track growth of the healthcare industry against theory. Similarly it is important to track growth in demand for healthcare design services, operating as a lagging indicator, against the diffusion of innovations curve. If it can be said that healthcare design lags the healthcare industry, it can also be said that healthcare design education in academic and continuing education delivery models, lags the healthcare design field. Diffusion of innovations theory can serve as a predictor of the future of healthcare design and healthcare design education. To measure and compare recent growth in healthcare design as well as academic setting formative educational demand is a topic for future exploration.

The basic diagram underlying this theory is a bell shaped curve indicating

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119 Reference: figures 11, 12 and 13 (page 48) of this Thesis.
beginning (small), middle (large) and ending (small) periods.\textsuperscript{121} Using standard deviations as markers, the curve can be divided into categories. Categories have become part of the way many organizations think about change. Innovators represent only 2.5\% of population, and are distinguished by their 'degree of being venturesome', tolerance of risk, fascination with novelty, and willingness to interact with people in other places and disciplines in order to learn.\textsuperscript{122} Once innovation occurs, early adoption takes root and grows or withers. A “tipping point” for change efforts occurs at around 20\% - a place after which stopping change from spreading becomes difficult.\textsuperscript{123} Adoption takes energy, and innovators need energy for search and tinkering. Figures 11, 12 and 13 (page 49) illustrate these aspects of this theory’s graphic interpretation.

\begin{itemize}
  \item For early adopters to find innovators and to test promising discoveries in small tests.
  \item For early majority to network with early adopters to learn details of new ideas and assess risks and benefits.
  \item For late majority to monitor culture; and laggards to remain in the past without feeling too out of step (Trustees of Columbia U., 2008).\textsuperscript{124}
\end{itemize}

Enough play in the system is necessary to accomplish changes. Production stresses, cost reduction or indeed survival cannot occur.\textsuperscript{125} “Paradigm pioneers” (or innovators) “risk their reputations, positions, even economic situations, on a non-rational decision.”

\textsuperscript{124} Columbia University, Trustees of, “An online patient safety analysis training Course-A Dept. of Defense, Agency for Healthcare Research and Quality partnership,”
\textsuperscript{125} E.M. Rogers, \textit{Diffusion of Innovations, 3rd edn.}, 422-435.
Figure 11. Illustration of diffusion of innovation theory curve distributed through a social system with percentages of adopters. Source: http://www.tomplanck.com/2008/08/

Figure 12. Illustration of initial half of diffusion of innovation curve from “take off” through “saturation”. Source: http://www.globe-online.com/philip.uys/phdthesis/chapter2.html


Figure 13. Three-dimensional Illustration of diffusion of innovation theory highlighting the critical “chasm” point between taking root and failure of adoption. Beyond this lies the “tipping point” and “early majority” after which momentum is difficult to stop. Source: http://www.startupu.net/contents/growth/diffusion-of-innovations/
Change occurs “not as an act of the head but as an act of the heart”. Innovators can gain substantial advantage over competitors in theory but may not survive long enough to reap rewards. These principles mirror the recent emergence of healthcare design as an area of specialization and its current growth. Five areas described as being affected by this theory (and included in the thesis educational diagram) are directly pertinent to this thesis.

**Social system** (definition: *A set of interrelated units engaged in joint problem solving to accomplish a common goal*). Most evident in professional and peripheral healthcare design organizations. Energy and dedication that has transformed healthcare design from among the most uninteresting and rigid of building types into an admired field is due to the commitment of this social system. Educationally this system is evident in continuing education efforts involving certification, evidence-based design, and sustainability. Social system approach has not taken root in the academic community but could with recent growth of interest in healthcare design education for design students. Rogers advocates building and reinforcing social networks. Consistent gathering of people who do similar work to work together on important issues helps create networks to speed uptake of new ideas.

Collaboration between researchers and practitioners within and among disciplines has been found to enhance diffusion of innovations in evidence-based practice. Success

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127 Columbia University, trustees of “An online patient safety analysis training Course-A Dept. of Defense, Agency for Healthcare Research and Quality partnership,”
128 S. Verderber and D.J. Fine, *Healthcare architecture in an era of radical transformation*:
129 Columbia University, trustees of “An online patient safety analysis training Course-A Dept. of Defense, Agency for Healthcare Research and Quality partnership,”
may relate to the point in the process at which it is offered.\textsuperscript{130} Currently this occurs mostly in the area of continuing education.

\textbf{Communication channels} (definition: \textit{The means by which messages get from one individual to another}).\textsuperscript{131} The means by which communication occurs within a social system, building upon the social system. Conferences such as the Vendome annual Healthcare Design Conference, professional conferences, publications, webinars, etc. Facilitated by the need to remain current in knowledge and practice skills, and the need for continuing education credits to maintain professional accreditation. Networks are built when people are engaged in conversation with each other. Interaction makes it work.\textsuperscript{132}

\textbf{Diffusion} (definition: \textit{The process by which an innovation is communicated through certain channels over time through members of a social system}).\textsuperscript{133} Definition bridges continuing education and academic education. An example might be the ‘pebble’ projects managed by the Center for Healthcare Design and their application in education settings, benchmarking and beyond, with ready access for all. This helps to make the actions of early adopters visible\textsuperscript{134} and creates ‘waves’ of influence.

\textbf{Innovation} (definition: \textit{An idea, practice or object that is perceived as new by an
individual or other unit of adoption).\textsuperscript{135} Definition bridges multiple areas and is applicable to academic education, the introduction of new healthcare design programs and what is necessary to become established. In particular the need for an educational approach that teaches qualities necessary for excellent practice. Need for ‘slack’ in the system to accomplish changes is an interesting challenge\textsuperscript{136} worthy of future exploration.

\textbf{Time} (definition: \textit{Length of time required to pass through the innovation decision process}).\textsuperscript{137} Applicable to academic education and the introduction of new healthcare design programs, the learning curve in undertaking this task and remaining current within a rapidly changing complex discipline (create slack in the system for change to occur). Interaction requires sufficient slack for early adopters to hold one-on-one conversations, and come together frequently counting on the ‘tipping point’ to accelerate momentum.\textsuperscript{138} The observation that the feedback loop is slow in architecture needs to be addressed. The speed with which innovation is put to use depends on perception by those who must adopt it. Millenson cites a different take on the five characteristics in relation to adoption:

\begin{itemize}
  \item “relative advantage over what currently exists;
  \item compatibility with existing values and behaviors;
  \item lack of complexity;
  \item the ability to be subjected to experiment (“trial ability”);
  \item producing results everyone can see (“observability”)” (Millenson, p.354).\textsuperscript{139}
\end{itemize}

Reasons for non-adoption is captured further on with Gregory Angstrnan, a mayo clinic family practitioner’s "The Rule of Toos":

\begin{itemize}
  \item \textsuperscript{135} E.M. Rogers, \textit{Diffusion of Innovations}, \textit{3rd edn.} 422-435.
  \item \textsuperscript{136} Columbia University, trustees of, “An online patient safety analysis training Course-A Dept. of Defense, Agency for Healthcare Research and Quality partnership,”
  \item \textsuperscript{137} E.M. Rogers, \textit{Diffusion of Innovations}, \textit{3rd edn:} 422-435.
  \item \textsuperscript{138} Columbia University, trustees of, “An online patient safety analysis training Course-A Dept. of Defense, Agency for Healthcare Research and Quality partnership
  \item \textsuperscript{139} M.L. Millenson \textit{Demanding Medical Excellence}, 354, 355.
\end{itemize}
The final requirement Rogers lists—that an innovation produce "observable" results—may depend on what one is prepared to see. Emanuel Papper, a world-renowned anesthesiologist wrote that the ability of ether to dull pain was known for centuries before anyone thought of applying it to making surgery less agonizing. Suffering was associated with nobility of spirit or viewed as a punishment for sin. The acceptable had to become unacceptable, and what had been perceived within society as unchangeable had to be seen instead as a problem in search of a solution. To use Thomas Kuhn's description of a paradigm revolution: "Scientists [can] see new and different things when looking with familiar instruments in places they had looked before". Florence Nightingale was a paradigm pioneer turning public health on its ear.

Diffusion of Innovations theory provides an underlying reference point for comparison and measurement. The growth of the healthcare design field closely tracks this theory's adoption curve and demand for healthcare design education may follow. Relating research and survey results to this theory is important in understanding what has occurred and what the future may bring.

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140 M.L. Millenson *Demanding Medical Excellence*, 355.
141 Emanuel M. Papper, *Romance Poetry and Surgical Sleep: literature influences medicine*:
22 Contributions in Medical Studies, Number 42, (Westport, Conn.: Greenwood, 1996), 22
Chapter 4

Professional Organizations.

Professional and related organizations have taken the lead in formulating continuing education in healthcare design for their members. The Continuing Education Educational Diagram (Figure 17, page 73) illustrates relationships in this area. Umbrella professional organizations such as the American Institute of Architects (AIA), American Society of Interior Designers (ASID), and International Interior Design Association (IIDA) work in concert with independent allied organizations such as the National Architectural Accrediting Board (NAAB), the National Council of Architectural Registration Boards (NCARB), the Council for Interior Design Accreditation (CIDA), and the National Council for Interior Design Qualification (NCIDQ) to regulate educational requirements by way of certification and examination for entry into professional organizations. Responsibility for academic education and accrediting requirements rests with the independent allied organizations at a local and national level. Understanding current educational thought through a comparison of NAAB and CIDA design accreditation standards is helpful. Together these organizations form a framework that supports the field of design education including healthcare design today.

‘Educational Realms and Student Performance Criteria’ (an NAAB heading) describes two levels of accomplishment, understanding and ability. Understanding is described as –“the capacity to classify, compare, summarize, explain and /or interpret

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information”, a “hard” competency. Ability is similarly “hard” in its focus on proficiency. The description of ‘Student Performance Criteria’ includes critical thinking, representation and a long list of skills including communication, design thinking, understanding of systems, etc. Life safety, a healthcare concern, appears under ‘Integrated Building Practices, Technical Skills and Knowledge’. Reminiscent of medical education’s post-modern emphasis on competence rather than on excellence, competence is reflected in these skills description.

CIDA’s accreditation standards include human behavior, collaboration, communication, professionalism and business practice as standards most applicable to the qualities being examined. Discussion of “demonstrating the ability to apply theories of human behavior, the ability to synthesize information and concepts, and demonstrate creative thinking” are detail examples. Expectations include to “create opportunities for innovation and creative thinking and to develop critical listening skills”.

“Collaboration and interaction with multiple disciplines with a variety of points of view and perspectives” is a skill to be encouraged.

Returning to umbrella professional organizations and their educational counterparts. Independent organizations share common purposes and members with umbrella professional organizations and independent but allied organizations.

145 NAAB 2009 Conditions for Accreditation- National Architectural Accrediting Board, Inc
Professional in nature, are the American College of Healthcare Architects (ACHA), the first specialty certificate program recognized by the AIA\textsuperscript{148}, and the American Association of Healthcare Interior Designers (AAHID).\textsuperscript{149} A third organization and the largest in membership is the Academy of Architecture for Health (AAH), a subset of the AIA.\textsuperscript{150} Independent organizations provide continuing education, specialized certification, and are essential in dissemination of knowledge to the healthcare design community.

An interdisciplinary perspective is provided by the Center for Health Design (CHD)\textsuperscript{151} and its subsidiary Evidence-based Design Accreditation and Certification (EDAC). EDAC focuses on a specific issue, promoting, and educating, measuring and accrediting evidence-based design knowledge.\textsuperscript{152} CHD sponsors the annual Healthcare Design Conference and promotes initiatives to organize gathering of knowledge for improvement within the field, such as the Pebble initiative. The Pebble project identifies benchmark facilities and provides credible and relevant research by partnering with health centers to become significant transformers. Resulting ‘ripple’ effects create benchmark information helpful in convincing decision makers to embrace and implement

\textsuperscript{151} Center for Health Design website from http://www.healthdesign.org/ (Accessed on March 5, 2011)
\textsuperscript{152} EDAC website from http://edac.healthdesign.org/ (Accessed on March 5, 2011)
evidence-based design based on research.\textsuperscript{153} Membership of CHD is diverse including executives and administrators from health institutions and suppliers in addition to designers. Figure 14 (page 56) illustrates relationships between healthcare design organizations and the framework they form as described in this chapter and thesis.

Client organizations such as the American College of Healthcare Administrators (ACHCA) hire healthcare designers and have a vested interest in obtaining best possible results through partnering with excellent healthcare designers. In an increasingly competitive health environment, benefits from good design are key performance differentiators.

2009 membership statistics from the AIA, estimate 105,000 licensed Architects in the United States. (NCARB), 56,000 of whom are AIA members. AIA membership or holding an NCARB certificate is not necessary for architectural licensing. Eighteen percent of all architectural firm revenues come from healthcare facilities design (AIA, 2009);\textsuperscript{154} tied with education projects as largest building type sources of firm revenue in 2009. Membership in ACHA requires specialized certification. A reasonable expectation is that almost all of the ACHA members are also AIA and AAH members. Using the AAH membership figure, this loosely equates to approximately 8.8 \% of AIA members being engaged in healthcare. ACHA members appear to represent additionally committed (by virtue of the certification process required for membership) healthcare architects and


account for approximately half of one percent of AIA members. Both member percentages are disproportionately low considering the percentage of current revenue being generated by this sector. Both the AAH and ACHA share many of the same members as membership in AAH is an option for members of the AIA.  

ACHA’s vision statement is “to be the organizational voice of the best and brightest healthcare architects”. AAHID’s designation is “recognizes excellence, commitment and knowledge. It further distinguishes preeminent healthcare interior designers”. Both organizations have significantly fewer members than AAH, possibly due to the specialized certification examination requirement for membership. Purpose statements demonstrate openness towards qualities of excellence in healthcare design practice.

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155 Author telephone conversation with B. Bland –AIA headquarters Re- AAH membership (3-14-2011)


158 AAH has 6,363 members (B. Bland –AIA headquarters -tel. conversation, 3-14-2011); ACHA has approx. 249 members (S. Meyer, candidate services tel. conversation)(3-14-2011); and AAHID has 110 approx. members (3-15 e-mail).
Chapter 5

Education

“I foresee a situation where the facts, the information side, can be learned on the Internet ... The role of the school will be to educate socially and to teach values, enabling the students to handle emotions as well as facts.” (Dr. Rolf Jensen Interview by Teo, 2001) 159

The cognitive side of global education is ineffective and lifeless without its affective part, a sense of world citizenship. This sense of world citizenship rests more upon values and feelings than upon cognitive concepts and generalizations (Farmer, 1984, p.162) 160

Two surveys of key competencies within interior design have been undertaken. Of the ninety-two competencies listed, those rated as "extremely important" were problem solving, oral communication skills, and design concept in the first study. The second study elaborated with many more, all of which were “hard” skills”. 161 Almost none of these competencies touch on the “soft” side of qualities.

A 2007 survey study suggests that design students who participated were taught that “intuition” was the least important problem-solving method and of lesser status than other methods such as ratio, algorithm, and metaphor. Davey and Beazley concluded that most design faculty do not consider intuition a “viable or [even] rational means of decision making”. 162 Watson and Thompson found interior design students’ most prevalent learning style within the majority bimodal group suggesting interior design

159 A. Teo, “Selling the story behind the egg {Interview with Rolf Jensen}”. The Business Times Singapore, 2001, April 17, 27.
students prefer intuitive and interpersonal learning experiences. Clearly the faculty bias described in this study would effectively undermine intuitive learning opportunities in an academic healthcare design setting.

Students collectively exhibit a “right-brain” thinking style, most comfortable engaging in conceptual, integrative, and imaginative processes as well as expressive, sensory, and interpersonal processes. In addition they collectively exhibit a low preference for left-cerebral thinking and are more likely to overlook or avoid analytical and critical thinking processes. Watson and Thompson (2001) found the analytical processes associated with an abstract-sequential learning style to be least preferred by interior design students (preferred by only 2% of the sample); as well as Nussbaumer and Guerin (2000) who found the critical processes associated with a convergent learning style to be least preferred by interior design students (preferred by only 16.6% of the sample). (Watson & Thompson, p.16)

The assumption has carried over that scientific research was also the basis for professional practice including design and its processes. The dominance of the objective approach in academia and research can be seen through a review of articles published in the Journal of Interior Design. Only eleven of seventy-two published works from 1997 to 2007 discussed emotion and/or intuition, usually in the context of its presence and utility within identified human populations. None overtly discussed public or interior designers’ attitudes toward intuitive knowledge. An opportunity for further inquiry exists.

Analytical and critical modes of thinking are vital to design problem solving. Analytical thinking to explore and clarify the initial design problem, restructuring the problem into a set of objectives, directions, goals and “means and ends” rules to guide

164 Donald. Schon, The Reflective Practitioner: How Professionals Think in Action, 91
decision making. Critical and convergent thinking are needed to evaluate the effectiveness of emerging solutions as the design unfolds.\textsuperscript{166}

Emotional maturity as exemplified in qualities such as awareness, empathy and control is necessary for transformational learning to occur. Goleman called this emotional intelligence (EI).\textsuperscript{167} Characteristic is the ability to monitor moods and emotional reactions and change them through self-management.\textsuperscript{168} Figure 22 (Appendix page 126) illustrates links between EI competencies and design education competencies. This thesis addresses standards of excellence that build on minimum standard competencies before excellence can be achieved.

For jobs of all kinds, emotional competencies were twice as prevalent among distinguishing competencies as were technical skills and purely cognitive abilities combined. In general the higher a position in an organization, the more EI mattered. EI is the more powerful predictor than IQ as to which practitioners rise to the top and which plateau or fail.\textsuperscript{169} The practice of excellence within healthcare design may incorporate elements of EI in qualities selected.

Greiner et al cited a vision for health education where “all health professionals are educated to deliver patient centered care as members of an interdisciplinary team,

\begin{itemize}
\item \textsuperscript{167} D. Goleman, Emotional Intelligence. (New York: Bantam,1995).xxxiii
\item \textsuperscript{168} Sheila Danko, “Nurturing Whole Person Development and Leadership Through Narrative” Interior Design Educators Council,Journal of Interior Design 29(2&2) (2003), 87
\item \textsuperscript{169} Cary Cherniss, and Daniel Goleman, The emotionally intelligent workplace: how to select for, measure, and improve emotional intelligence in individuals, groups and organizations,196
\end{itemize}
emphasizing evidence-based practice, quality improvement approaches and informatics”. Greiner suggests a “hidden curriculum of observed behavior, interactions, and the overall norms and culture of a student’s education environments are extremely powerful in shaping the values and attitudes of future health professionals”. Similarly excellence in healthcare designers is often underlying, not overt, a byproduct of incremental growth and discipline become habitual.

Hayward recommends giving students the opportunity to develop collaborative relationships to encourage interdisciplinary education; essential for cross-fertilization among disciplines and supporting development of mutual respect. Academic environments of various health professions are not generally interdisciplinary in approach, however practice environments are increasingly so, posing a serious gap. Health professionals in practice are frequently asked to work in interdisciplinary teams, without being educated together or trained in team-based skills. Academic and professional design studio environments provide a possible antidote to this education deficit. Health professionals are socialized in isolation in educational settings, hierarchy is fostered and individual responsibility and decision making relied upon. Greiner et al expects more, not less, overlap and some future fusion of roles.

Students are also being trained in ‘narrative medicine’, understanding that part of a diagnosis is contained in a patient’s story. Narrative has the ability to nurture

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170 Anne C. Greiner, and Elisa Krebel (Ed.). *Health Professions Education: A Bridge to Quality*, 3
171 Anne C. Greiner, and Elisa Krebel (Ed.). *Health Professions Education: A Bridge to Quality*, 9
174 Anne C. Greiner, and Elisa Krebel (Ed.). *Health Professions Education: A Bridge to Quality*, ix, 2.
intellectual and emotional development in higher education. Boyatzis believes that inclusion in the social sciences will help raise students’ “awareness of the diversity and complexity of human experience… knowledge construction can occur in subjective, relative positions as well as objective, absolute positions”.\(^{175}\) Powers of observation are being honed through exercises in studying paintings in museums. Spirituality is being incorporated into coursework and students are being admitted for overnight hospital stays to personally experience what it is like to be a patient.\(^{176}\) Understanding of patient emotions may be key to understanding experience and crafting empathetic healthcare design solutions.

A shift towards incorporating evidence-based practice as part of the curriculum and problem based learning has shown to facilitate development of critical appraisal skills.\(^{177}\) The ability to be *able to anticipate problems and solutions* may be a quality of an excellent healthcare designer.

Novack et al states that “Busy attending physicians rarely move beyond the cognitive aspects of cases- differential diagnoses, pathology, and “fascinomas”- to a biopsychosocial analysis of patients’ illnesses, or share with students how they have coped with feelings of anger, anguish, or shame in caring for certain patients”.\(^{178}\) Personal development and the well-being of the healer are critical aspects that are often taken for

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176 Daniel H. Pink, *A Whole New Mind: moving from the information age to the conceptual age*. \(^{52}\)

177 Anne C. Greiner, and Elisa Krebel (Ed.). *Health Professions Education: A Bridge to Quality*, 82

granted and neglected in medical education. A humanistic approach to healthcare design requires education encourage a willingness to become vulnerable and recognition of its importance in practice and learning.

Many medical students experience internal conflict while struggling to reconcile personal values related to empathy, care, and compassion with their clinical education. Strong identification with patients can at times extend to consideration of themselves in their patient's place.\textsuperscript{179} Patient privacy and adherence to HIPAA law becomes critical when viewing the medical process from the patient perspective. Patient focus has opened opportunities for healing design and the introduction of wonder and delight into the hospital environment.

Branch says “that at its core, the issue is one of moral development- medical students feel trapped between the need to live according to their moral principles and the many perceived pressures to suppress their principles in order to fit in as team members”.\textsuperscript{180} Perseverance may be an important quality for healthcare design practitioners. “It is not enough for leaders to understand their own values; they must understand the values of others”.\textsuperscript{181} Education intended to nurture leadership must cultivate personal understanding and empathy which requires individuals to develop both an inward personal consciousness and an outward social-awareness of their role in the


\textsuperscript{180} W.T. Branch Jr., “Supporting the Moral Development of Medical Students”;504

\textsuperscript{181} C., Norris, and B., Barnett, M., Bosom, & D. Yerkes, \textit{Developing educational leaders: A working model, the learning community in action}. (New York: Teachers College Press, 2002):33
Reflective learning allows students to conceptualize and generalize their behavioral changes and integrate them into their mental structure of knowledge, skills, and values. Learning by practice without the added component of reflection has been shown to not promote psychological growth. Reflection is very important for healthcare designers to gain perspective from their experiences.

Role modeling is often cited as the method for teaching students ethical behavior and conforming to professional standards. Studies of role modeling suggest that students and residents identify most positively with faculty who are enthusiastic and love their work, as well as those whose clinical skills and teaching abilities are considered very competent.

Activated knowledge is fundamental to lifelong higher learning, transformational and the ultimate goal of all education. The active use of information that is not only true but that, when insightfully understood, leads us by implication to more and more knowledge defines the practice of activated knowledge. “Knew knowledge” is activated and conformity, manipulation, and self-deception are observed in familiar settings.

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182 Sheila Danko, “Nurturing Whole Person Development and Leadership Through Narrative”: 82
183 W.T. Branch Jr., “Supporting the Moral Development of Medical Students”, 505
184 W.T. Branch Jr., “Supporting the Moral Development of Medical Students”, 506
Everyone thinks; it is our nature to do so. But much of our thinking, left to itself is biased, distorted, partial, uninformed or down-right prejudiced. Yet the quality of our life and that of what we produce, make, or build depends precisely on the quality of our thought . . . Excellence in thought, however, must be systematically cultivated (Paul, Elder, 2007,p.2)\textsuperscript{186}

A series of healthcare design educational diagrams follows (Figures 15-18 on pages 65-68) comprised of an overview diagram with three detail diagrams covering basic education, and branching into continuing education and academic education. These represent educational areas for future exploration.

Figure 15. Overview of the healthcare design education diagram developed by the author for this thesis.
Healthcare Design Education: Basic

How are these determined? -> Questionnaire/Survey

Excellent Healthcare Designer Qualities Listing

Inherent

Educatable

Design Professionals, Medical Administrators, Researchers

How are they achieved?

Information Survey

Continuing Education

Experience

Education

Listing of healthcare design educational programs
Figure 17. Section of the healthcare design education diagram developed by the author for this thesis. Continuing education detail. Source: The Author-thesis-Healthcare design education (unpublished) (2010).
Figure 18. Section of the healthcare design education diagram developed by the author for this thesis.
Chapter 6

Research Methods

Research Question/Aim:

The qualities of an excellent healthcare designer will be explored as an approach to studying education for healthcare designers.

These qualities form the essence of what the goals of a healthcare design education should entail and are relevant in related areas beyond this thesis. Understanding what professionals need (qualities of excellence) with a view to producing possible answers underlies this thesis.

A research design flowchart (Figure 19, page 70) illustrates the research process undertaken in this thesis.

Implications of Research

The healthcare design field is searching for ways to give future designers exposure to healthcare design as a specialization, to generate interest in this field and reduce the post-hire learning curve. Little is known about the qualities that determine excellence in healthcare practice. A critical evaluation of educational curricula and desired qualities of excellence would allow both academic design programs and practitioners to understand and select best practices for educating and maximizing the potential of future healthcare designers.

Growing interest is evident within design programs to establish healthcare design
value loaded studios and electives to better prepare graduates for a design field where design activity remains stronger than most.\textsuperscript{187} A need exists for research based curricula to guide establishment and educational goals of these programs. A future survey of existing academic healthcare design programs would provide an understanding of what exists.

Understanding of these qualities would assist healthcare design firms in

Related research has focused on principally using an academic setting as the vehicle for creating a research basis for identifying competencies. This thesis recognizes that the subjects for identifying qualities of excellence in healthcare design practice are practicing professionals. Any useful research must reflect and build upon qualities that healthcare design professionals have selected as useful and meriting replication.

**Hypotheses**

1. If there are qualities of excellence for healthcare design then they must be identifiable.

2. If trust is to occur then accountability and integrity must be present.

3. If ability to manage complexity and anticipate problems and solutions are present then qualities of excellence must be present.

4. If ability to perceive the strategic vision of a healthcare organization exists then qualities of excellence are present.

5. If the ability to be highly creative and see the big picture is present then qualities of excellence are present.

**Approach/methods**

Little current research is associated with qualities of excellent practitioners and healthcare design education, offering opportunities for continued exploration. To bridge lack of current research, practitioner qualities in related fields such as medicine, design and education were explored as a means to circling and approaching this topic.
Knowledge was brought together to form a coherent basis for the survey questionnaire. Qualities of excellence in healthcare design were determined through the survey. This knowledge could fill gaps in current literature and provide a solid basis for new knowledge created.

Design education plays a critical role in providing specialized design education to support the expansion of the need for healthcare facilities. Underlying the qualities of excellent healthcare designers’ topic is a unique opportunity to focus the educational aspects of healthcare design and to set a direction for future design education. The decision by HDR (the largest healthcare architecture firm in the U.S.) to partner in an academic setting with the purpose of encouraging a focus on healthcare design,188 is symbolic of prescient action in the face of future demand from within the healthcare design community.

Healthcare design education and the qualities of excellent practitioners were addressed in answering the hypothesis questions through a self-administered questionnaire survey of experienced healthcare design practitioners.

The self-administered questionnaire survey was sent by e-mail to experienced healthcare design professionals, identified by reputation or membership in a healthcare design related professional association. Focus was on ‘qualities of excellence’, defined as

the attributes of an excellent healthcare designer, whom healthcare designers had witnessed in practice. Qualities may guide future research into and exploration of proven educational methods to replicate them in practice. A survey of existing healthcare design educational programs and listing of approaches and curricula in current practice will be compiled as part of future research, and will form the basis of a critical analysis. The combination of ‘qualities of excellence’ and best practice, defined as the best approaches, learning from existing educational programs will provide the foundation for future development of an educational tool.

Research Questions

Selection of words/qualities

Research was done on the term “excellence”. Initial results included business, leadership or hiring qualities emphasizing successful achievement, rather than more subtle difference makers. Further research led to qualities which may be applicable to healthcare designers. Personal qualities and competencies in related fields such as medicine were characteristic of journal themes. Figure 21 (page 125, in the Appendix) lists the initial category of responses from the UK Anesthesia study and represents the best qualities information found during the literature review. Interviews were done with persons experienced in health and healthcare design to understand their thoughts in response to the what characterized “excellence” question. Focus shifted to question themes that were uncommon and beyond typical competency. Advanced healthcare design methods were researched and explored as potential key differentiators. A
methodical review process with much back and forth between author and advisor ensued in testing the validity of themes, definitions, exploring meaning and clarity. The qualities wording source path is illustrated in Figures 7-9 on pages 21-23.

**The Questionnaire**

Approach was to supply content or information and have respondents rate their importance. A five point likert scale format was selected as the basic response format. Research showed this to offer a greater level of variance than four points and seven seemed excessive. The goal was to produce more information and more variance to enable clearer results and deeper analysis. With meaningful and reliable variance more powerful analytical techniques could be used.

Single word lists of attributes and qualities drawn from the literature review were placed at the beginning. Two of the likert lists were interpreted in rank order format to confirm priority in assigning importance to selections. Questions were introduced in sections that followed using a likert scale methodology, organized and grouped according to like category themes. This allowed general cross comparison between questions within the same category.

The five point likert scale selected was comprised of (running left to right) Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, resulting in a balanced response format.

Pilot testing was done for comprehension, clarity, ambiguity, difficulty responding to, and time elapsed. Input from test respondents was used to improve the
survey and to shorten its length. The goal was to assemble as many different qualities related healthcare design issue questions as could be completed in fifteen minutes or less; the maximum responder duration possible before loss of interest and potential responder abandonment might occur.

Responders were asked for suggestions as to additional qualities not covered by the survey to enable further learning and refinement. A recent research study on qualities of excellence for anesthesiologists’ in the UK came to five overriding conclusions. These conclusions were included as a separate section labeled characteristics, with identical wording for three of the conclusions and changed wording for the remaining two. This exercise tested transferability of conclusions from one related field to healthcare design.

**Data collection process, IRB**

The online Human Participants (CITI) training, a prerequisite for submission of a survey instrument to the University of Nebraska –Lincoln (UNL) IRB was taken and passed. UNL Bureau of Sociological Research (BOSR) in the School of Arts and Sciences was consulted for initial survey design direction. Concerns regarding undertaking an online survey and resource availability at UNL were discussed. Advice concerning type of questions, wording and format was given. The Survey, Statistics and Psychometrics (SSP) Core Facility within the same school was consulted for advice and possible access to online survey software. Options were discussed as was the possibility of using a UNL license for Qualtrics software with its sophisticated data encryption
capabilities. A second referral to the Nebraska Evaluation and Research (NEAR) center provided statistical consultation in the design of the survey.

A self report questionnaire online survey, self- administered online was determined to be the most effective and fastest means of collecting data from responses to questions. Mail survey was determined to be too slow and inconvenient to execute, phone survey too time consuming and difficult to achieve. An e-mail survey provided the best match of efficiency, convenience, and flexibility. UNL’s Qualtrics license provided a reputable software vendor to partner with in preparation and execution of the survey. Resources and recourse in a proven product were available along with substantial support services. Maintaining as professional an appearance as possible operationally, content-wise, graphically and in terms of service capability was necessary to appeal to the sample of healthcare design professionals being sought.

E-mail addresses of healthcare design professionals were collected by the author. The more experienced a healthcare design practitioner was, the more likely it was they had exposure to practitioners whose qualities were excellent. In addition three prominent healthcare organizations were contacted as a method to maximize participation and response rates. AAHID (Interior designers) agreed to participate as did ACHCA (healthcare administrators), representing the client perspective. Both organizations requested that a link be sent to them with a letter of introduction and a reminder letter so that they could contact their membership and maintain privacy of their e-mail list. The participation of professional organizations in sending out invitation e-mails added a level of credibility the author could never have approached on his own and increased the
probability of recipient participation.

Invitation and reminder e-mails were carefully crafted using market survey research done online. Approach was as professional and inviting as possible taking into account all appropriate ethical considerations. The principle challenge was in convincing the e-mail invitation recipient that it was in their best interest to participate. Response rates to online invitations are extremely unpredictable meaning every contact method must be designed as effectively as possible. A smaller body of good data was preferred over a larger pool of poor data. The equations of more effort equals more data and an increase in researcher control equals an increase in quality of data were followed throughout preparation.

The thesis committee reviewed the questionnaire in its draft stage and made suggestions which were incorporated in the draft before submission to the IRB. At the end questions concerning respondent demographics were added. In addition to professional affiliations and areas of specialization, questions were asked as to the type of practice responders worked in using a variety of descriptions any of which could be selected. In addition there was a question asking the survey responders design philosophy.

The questionnaire was input into the Qualtrics system and formatted with their assistance including using their rank order format while the IRB approval process was occurring. System questionnaire was presented as attractively as possible and pilot testing used to ensure data collection questions worked to ensure the best data.
The questionnaire was reviewed and adjusted to meet IRB requirements including the addition of language concerning privacy and contact information to enable any responder complaints to reach the author, adviser or IRB. It was then submitted for IRB approval through the NU grant research administration system. Language for the invitation and reminder e-mails was submitted and revised as requested by the IRB before approval was issued. The IRB requested that they be copied on all outgoing e-mails which was done with e-mails the author sent out.

**Tools & Detailed Methodology**

The decision to focus on existing healthcare design educational programs as an area for future research and critical study was reached due to the comparative richness of available material and accessibility for efficient study. An important factor in an area without much current research and provider of initial direction for inquiry. Focus was amended to qualities of excellent healthcare designers on the advice of the committee due to breadth of initial topic and limited timeframe. The author was encouraged to pursue research into educational aspects of this thesis as a future endeavor.

The research tool for determining the qualities of excellent healthcare designers is a self-administered questionnaire survey issued to practicing professionals. The second and future research tool will be a survey of existing healthcare design educational programs. Research from both will provide the foundation for future development of an educational tool.

The research question suggested a qualitative approach to the topic, within the
framework of applied social research. The research methodology was mixed. The questionnaire was written to produce both quantitative and qualitative data for analysis. Quantitative analysis was used to identify patterns within the self-administered questionnaire responses including frequency of appearance. Qualitative analysis was used to examine specific aspects of the qualities of excellence and what they meant. By analyzing the data quantitatively, a weakness of qualitative research was strengthened, resulting in a more balanced approach. Intent was to maximize strengths while minimizing weaknesses of research instrument design.

**Reliability.** Stability of the survey response was good and analysis using SPSS tests did not reveal weaknesses requiring compensatory statistical action.

**Validity.** There were no perceived problems answering the questions. Most of the surveys begun were completed indicating a seriousness and conscientiousness to responses. None of the responses deviated from what might be expected from healthcare design professionals.

Books, research journal articles, conference proceedings and other sources were used to supplement analysis of results.

The **data set** is a listing of qualities and their ranked importance based upon responses from survey responders. The listing of qualities will enable future research into proven educational methodologies used to produce similar qualities. This research will provide a methodological framework upon which to build and implement a healthcare design educational curriculum. By allowing the responders to determine what the qualities of excellence are through their choices, it is hoped to avoid the danger of putting
forward an unattainable definition of excellence and reducing the impact of this research. Through the responders making conscious choices in answering the questionnaire, the definitions of excellent qualities will become tangible and real –the result of a sound research process.

**Data Collection Procedures**

- **Sample:** professional healthcare designers and clients.
- **Response Rates** Approximately (252) e-mail invitations were issued, 17% of that number were returned. Although ACHCA indicated that they would participate, no responders identified themselves as an administrator or as a member of that organization, therefore the assumption is that e-mail invitations were not issued.
- **Consent:** Consent of survey responders was implicit in their decision to respond to the invitation and participate by accessing the online survey. Consent wording was included in the invitation and follow-up e-mails. Confidentiality was defined and pledged in the invitation e-mail.
- **UNL IRB** : Approval Form (reference Appendix-4 )
- **Survey Participants**
  The survey invitation was sent to a listing of prominent healthcare design professionals and the membership of the American Association of Healthcare Interior Designers (AAHID) was asked to participate to provide an additional perspective.
- **Survey Distribution**
  
  **Web based survey** (Qualtrics) (reference Appendix- 6, Exhibit Survey)
E-mails

Recruitment (reference Appendix-1)

Follow-up (reference Appendix-2)

Thank you (reference Appendix-3)

Measures

Mean response to questions, quartile distribution and standard deviations of survey items were examined and tested using SPSS software however there were no unusual findings to report.

Data Analysis

Data cleaning. This involved deleting partial responses and recorded responses caused by inadvertent accessing of the questionnaire by the author during the survey access period.

Data entry into SPSS software in some cases to aid specific statistical analysis. Initial statistical tables and reports were available in the Qualtrics statistical report format.
Chapter 7

Results Analysis

(Note: See Appendix-5 (Chapter 8) for Statistical Data Tables)

Qualitative analysis of data from the survey was used to examine specific aspects of the qualities of excellence and what they meant. Quantitative analysis was used to identify patterns within the self-administered questionnaire responses including frequency of appearance. Analysis follows.

Part-1 Qualitative Analysis

Section A- Attribute Importance Ranking Question-1: characteristics- hi/low ranking- disparity between hi& low within internal ranking; spread or split.

Most highly ranked attributes were- “to listen to and restate issues effectively”, “to see the ’big picture”, and “to think critically about complex issues”. In the Middle were- “to anticipate change”, “anticipate problems and solutions”, and “to think outside the box”. Taking on a split ranking (hi & low) and demonstrating some uncertainty were, “manage complexity”, and “identify safety and quality outcomes”. Spread across the spectrum was, “to be highly creative”. Lowly ranked was, “focus on details”, and the lowest ranking was, “to think similar to and understand another healthcare profession”.

Question-2:and Question-3: comparison matrix (ranked most to least in matrix)

Questions 2 and 3 list the same attributes but were addressed differently as likert scale questions (Question -2 )and rank order question (Question-3).This matrix (Figure
20, page 83) compares results side by side ranked high (top) to low (bottom). Most of the attributes changed order in the center of both ranks. “Self reflection” and “competitiveness” remained lowest on both lists and “integrity” and “listening” were ranked most highly on both lists. Difficult to explain differences occurred due to the different response methods, direct for the rank-order question and indirect for the likert scale questions. Indirect due to the totaled effect of all likert-scale responses and lack of knowledge of grouped intent by the responder. These results illustrate the

<table>
<thead>
<tr>
<th>Section-B Question-2:</th>
<th>Q2 mean</th>
<th>Q2 variance</th>
<th>Section-C Question-3:</th>
<th>Q3 mean</th>
<th>Q3 variance</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrity</td>
<td>1.18</td>
<td>.15</td>
<td>Integrity</td>
<td>4.28</td>
<td>10.10</td>
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<tr>
<td>Listening</td>
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<td>.31</td>
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**Figure 20.** Survey Comparison between questions 2 and 3 illustrating different ranking comparing rank order and likert scale cumulative totals.
interchangeability of the ranking methodology and possibly the interdependent relationship aspect of the middle results; psychometric literature may shed further insight.

Section-D Question-4: Teamwork (3 questions):

“Having a collaborative mentality” was most strongly agreed to. “Recognition of a range of perspectives and complexity within healthcare organizations” had slightly fewer strongly agreeing with this statement. “Having an understanding of the values and thought processes of others” was ranked evenly between strongly agree and agree. Of the three statements this attribute was the most difficult and required the most personal effort. There was no disagreement.

Section-D Question-18 Patient/ family sensitivity (2 questions):

There was near unanimous agreement of the need to “value, elicit, and integrate patient and family preference” and “privacy”. The difference was in the degree of agreement between strongly agree and agree.

Section-D Question-19 Knowledge (6 questions):

The first two statements had near universal agreement with “an understanding of clinical practice” being less strongly agreed with. This may have to do with the issue of where boundaries between medical practice and healthcare design occur, clinical practice being seen as more medical practice. The third statement concerning the importance of “having a broad background and wide exposure to knowledge” attracted a group of
neither agree nor disagree responders. “Knowledge of materials resupply processes” had the largest number of neither agree nor disagree responders.

Statements where the majority strongly agree (as opposed to agree) are the best candidates for qualities of excellence, “being well read and having professionally current knowledge” and “intellectual capacity and the ability to integrate knowledge with skills” meet that criterion, with “the ability to interpret evidence-based research” close behind.

**Section-D Question- 20**  A Balanced Approach (6 questions):

This category contained an assortment of statements covering areas ranging from sensitivity to cultural differences to specialized area requirements. All of these statements were important with none justifying a category of its own. They will need to be considered individually rather than topically due to differences. Categories where the majority strongly agreed were in “the ability to justify a balanced approach solution to all parties” and “the consideration of specialized area requirements in the design process”. There was general agreement with all statements.” An understanding of organizational communication requirements” was considered less important than the others. This continues a pattern of less agreement on attributes expressing client centered concerns.

**Section-D Question- 21** Management (2 questions):

Disagreement and strong disagreement occurred on this category. Approximately 25% of responders disagreed that “the ability to accurately interpret team members’ values and perspectives” was important and 15% were neither. “Having a commitment to
break down independent practice ‘silos’” had 30% of respondents in the neither category. It should be noted that on this question the Likert scale was inadvertently reversed and not corrected possibly adding some confusion to the response process. Nevertheless, both of these questions appear more contentious than others and bear future exploration with perhaps additional explanation.

Section-D Question- 22 Professional Cultures (3 questions):

“Recognition of the boundaries of each profession’s contribution” had 40% of respondents selecting neither or disagreeing. This possibly alludes to disagreement or confusion as to the boundaries of the work that each profession does. “Speaking a common language, the ability to match healthcare concepts to the language of design” was evenly split between strongly agree and agree. “Recognition of how one’s own perspective may influence and/or distort the process” had several neither responses which was puzzling as the statement language appears quite clear.

None of these statements garnered a majority of selections in the strongly agree category limiting their contribution to qualities of excellence from a survey contribution perspective.

Section-D Question- 23 Integration (3 questions):

“The ability to perceive the strategic vision of the healthcare organization” had a majority of selections in the strongly agree category and is a candidate for qualities of excellence. “Revision of opinions and recommendations in light of new information and insights from other professions” was split between strongly agree and agree.
“An understanding of cultural change and the need for robust interventions” had almost one third of responses in the neither selection category which raised questions as to what was being said. The description “robust interventions” might appear foreign and aggressive to responders unfamiliar with how this medical term can be used as a descriptive metaphor for the strength required to initiate cultural change against strong entrenched opposition.

**Section-D Question- 24 Innovation (4 questions):**

“Analysis of best practices and innovations in healthcare design”, “Creation of new designs for improving the quality and safety of healthcare environments”, and “Design results should complement efficient healthcare processes” had a majority of selections in the strongly agree category and may be considered for qualities of excellence. “Design should incorporate a life-cycle perspective” was almost evenly divided between strongly agree and agree representing agreement on the necessity for a sustainable perspective.

**Section-E- Question- 25 General Characteristics of Excellence (6 questions):**

These statements were drawn from a list of conclusions arrived at in the study 'Excellence in Anesthesia: the role of personal qualities and practice environment’ – Smith, Glavin & Greaves (2011). The purpose was to compare results of that study with this thesis survey while changing the subject name. An exercise in how conclusions might/ or might not be heuristic in application across field and professional boundaries. Two of the six questions were purposely inverted for the purposes of this survey, so as to
counteract any carryover wording bias from the Smith, Glavin & Greaves study conclusions.

None of the respondents agreed strongly enough to have the strongly agree category predominate or engender the strength of agreement necessary for consideration in the qualities of excellence category.

“Excellence in design is a pre-requisite for excellence of any other kind in healthcare design” had 36% of respondents either choosing neither or disagreeing. This was surprising coming from a group of healthcare designers and is worth future investigation.

The context in the Anesthesia study was excellence in clinical work being a prerequisite for excellence of any other sort.

“Excellence in healthcare design is context specific, particular to that profession” 34% of respondents chose neither or to disagree.

The context in the Anesthesia study was seen to be context –specific, in that attributes identified were thought of as particular to anesthesia. It is likely that the identity of anesthetists is more closely identified with the practice of anesthesia than the identity of healthcare designers is identified with healthcare facilities.

“Excellence is manifest in all domains of an outstanding practitioner’s work”. 21% of respondents chose neither or to disagree, which in this case meant that they were in agreement with the Anesthesia study.
The context in the Anesthesia study was qualified by saying that excellence may not be manifest in all domains of even the most outstanding practitioner’s work because different individuals have differing contexts and opportunities for development. This statement was purposefully changed to counteract any wording bias from the anesthesia study.

"Excellence is dynamic, developing with time" 24% of respondents chose neither or disagreed that this is the case. This response was perplexing unless the respondent thinking is that excellence is a gift and unattainable by any other method.

The context in the Anesthesia study is that excellence was thought both to develop with time but also possibly to change focus throughout the stages of the consultant career. The second part of this sentence became the next statement.

"Excellence changes focus throughout the stages of a practitioner’s career" 34% of respondents chose neither or disagreed that this is the case. Also difficult to understand given the age maturity of the sample group.

"Excellence is possible even if there is a serious flaw in an aspect of one’s work". 71% of responders chose neither or disagreed that this is the case. Given that this is the second question purposely inverted from the Anesthesia study, the majority of respondents was in agreement with the anesthetists conclusions.

The context in the Anesthesia study is that it is not possible to be excellent if there is a serious flaw in any aspect of one’s work.
**Question-5: Section-F Qualities and Practice- Qualities omitted from Survey.**

One of the more interesting response categories in that it conveyed what respondents thought had been overlooked in the qualities described in the survey. Some suggestions were universal, “such as sense of humor”. Other notable suggestions were “compassion”, “knowing what you don’t know”, “knowledge of associated practices”, and “understanding of history of healthcare”.

**Question-6: Practice attributes.**

**Type:** Interior Design was highest followed closely by Architecture, with Architecture and Engineering less and other less still. Some responses were more to practice areas and some overlap occurred.

**Size:** Most were large firms followed closely by medium size firms; boutique and single practitioner were less.

**Style:** Note: this category is not an either/or category so responders can select more than one item making direct comparison less meaningful; some overlap occurred.

In comparing which practice styles were most prevalent, “experience- strong service” was tops (67 %), reflecting the importance and prevalence of a service mindset within this field. “collaborative” was next at (56 %) with “practice-centered” almost equal at (54%). Almost equal were “competency” (46 %), “brains-strong idea” (44 %), “execution- strong delivery” (41%). “business centered” was less (26%) perhaps
reflecting less of a presence of peripheral types of business such as suppliers and dealers within the sample.

“control” and “cultivational” (star driven) at (5%) had low representation and are clearly less common these days especially in terms of self-description.

**Question- 7.** Design Philosophy Description

This question is probably more oriented toward architectural firms, perhaps with an academic slant. The number of architectural style philosophies is too numerous to consider listing and would require separate explanations as many of these ‘movements’ are named by others and resistant to labels. Healthcare design for the most part is comprised of practices that take functional aspects very seriously along with the considerable regulations governing health construction. Nevertheless there are themes such as sustainability which are already having an impact and are unlikely to fade with time. Responders were given a blank space to respond in whichever way they chose. Some of the responses that stood out are as follows with unique elements highlighted:

- “Our work focuses on the human experience of space. … and incorporate elements of surprise and wonder. … solutions that are of this time, developed with appropriately enduring visual and physical qualities.”
- “Listen to each client with a fresh ear and deliver unique solutions specific to their needs and relative to their geography as it relates to their patient population. Provide information to the client for the purpose of educating them so that they can make good decisions as an integral part of the design team.”
- “Our architects and designers weave the threads of design excellence into the fabric of the firm's culture, combining the passion for scale, finish and balance with function, fit and harmony.”
- “utilize a knowledge-base of best practices, evidence based design and personal experience to develop a solution that provides the best possible outcomes within the means of the organization. The
environment should be sensitive to the different, but equally important, needs and desires of patients, their families, staff and administration."

- “founded on a passionate commitment to design excellence, outstanding service, and creative solutions. We believe exceptional design emerges from focused dialog with the client, thorough understanding of a project’s context, inspiration cultivated through education and experience, and meticulous supervision of the process. We are driven by design responsiveness, not predetermined style, to create solutions that unite function and context, achieving a high level of both refinement and practicality.”

**Question- 8. Gender:**

Roughly two thirds of the respondents characterized themselves as female.

**Question-9 Profession:**

Half the sample was Interior Designers, One third was Architects and 13% were other, however that included two entries that identified themselves as both Interior Designers and Architects. Client perspectives were not captured in this survey.

**Question-10 Specialization:**

Healthcare predominated confirming the invitation selection process. Aspects such as “senior living” and “gerontology” were present as were “facility & strategic planning”. Specializations such as “acute and emergency care”, “women’s” were seen. Related specialties mentioned were “commercial interiors” and “higher education facilities”.

**Question-11 Professional Affiliation:**

Reflected the Architect and Interior Designer breakdown in Question-9 with AIA/ACHA affiliation for the architects (10) and AAHID affiliation for the interior
designers (18). Other credentials mentioned included LEED, EDAC, and IIDA.

**Question-12 Accreditation:**

Half the responders were interior designers; only 6% specifically chose ACHA, leading to the conclusion that most of the AIA/ACHA responses in Question 11 reflected an affiliation with AIA rather than ACHA. This is somewhat in line with the differences in membership between the AIA/AAH and ACHA, ACHA being the more stringent standard due to its certification requirement.

**Question-13 Highest Educational degree achieved:**

A little over half of responders (21) had their masters’ degree; 37% had a bachelor’s degree (14). The prevalence of masters’ degrees may be due to healthcare design education being treated as a specialized area, with established masters’ degree programs in place, particularly in Architecture.

**Question-14 University(s) attended:**

Variety was evident with many educational paths described. The program with most responses was Clemson (11).

**Question-15 years of experience in practice:**

Half of the responders had over 25 years of experience; 16-25 years experience (28%) and 6-15 years experience (21%). This sample does not show a recent influx into the healthcare design field possibly due to the sampling method; however it does reflect balance and experience which increases the likelihood of exposure to excellence practice.
It may be that those who have made an investment in the healthcare design field and have experience are more likely to take time to give back and committed to improvement by participating in a survey of this kind.

**Question-16 Age:**

The largest age group was in the 41-55 year old category (44%). This was followed by 56 plus category (33%) and 31-40 year old category (14%). This aligned with Question-13 and years of experience.

**Part-2 Statistical Tests**

The desire to find and implement further quantitative statistical tests on survey results drove inquiry into options in consultation with the NEAR center at UNL. Differences between raw data and the means were determined to not be significant for this study. A series of SPSS tests were run on the data to determine if there were any external problems; none were identified. A post-hoc (within subjects) test was run to determine if there were any hidden inconsistencies to the data that needed to be explored. Scale was determined to be internally consistent with correlations between each other and between each item and the totals. An attempt was made to take an approach similar to that used by Grieve in the study *Exploring the characteristics of 'teachers for excellence': teachers' own perceptions*. using a scatter plot methodology to organize attributes across survey organization boundaries. This was driven by the desire to find a meaningful statistical study model to increase the statistical side. Concerns regarding the statistical methodology used in the Grieve study and shortage of time resulted in a decision to
pursue analysis of results at a later time. The overall conclusion was that the majority of possible analysis lay on the descriptive/qualitative side and little outside of basic quantitative comparison was available on the statistical side.

**Part-3  Relationship between Survey results and Diffusion of Innovations Theory (DOI).**

The Diffusion of Innovations theory is central to this thesis and although current focus has shifted to qualities from education, it remains important to relate the research and survey results to this theory. Tracking growth against the DOI curve and its stage is part of a different future study, including research on demand for academic healthcare design programs.

Demand for healthcare design services, though not addressed in detail, can be understood through diagrams illustrating growth in the health sector and the AIA healthcare architecture fee stats, both referenced previously.

Underlying relationships exist between survey questions, responses and the five aspects of the DOI theory concerning this thesis.

**Social System:**

Social networks: AAHID and other professional organizations, create networks to speed uptake of new ideas. Continuing education, certification, EBD and sustainability are all evident in the survey accreditation response and represent 5% of responders.

Survey attributes included
• "to think similar to and understand another healthcare profession"- was ranked second bottom in priority. This may be reflective of the lack of penetration by interdisciplinary opportunities. Boundaries are important but can stifle when learning for understanding does not extend into other areas.

• "integrity-inspiring trust-the recipient of confidences”. Ranked most highly this quality binds the social system together.

Questions under Teamwork include

• "having a collaborative mentality"-ranked very highly most strongly agreed.

• “recognition of a range of perspectives and complexity within healthcare organizations”-slightly less strong agreement with agreement nevertheless.

• “an understanding of the values and thought processes of others”-split agreement between strongly agree and agree. The unpredictability of understanding others may be reflected in less strong agreement. The litigious nature of modern medical practice may also be reflected.

All relate to social system as do Patient/family Sensitivity includes

• ”the ability to value, elicit, and integrate patient and family preferences”- most strongly agreed.

• “Awareness of the need for patient privacy”- More strongly agreed with this quality whose importance is obvious.
Under “a balanced approach” there are

- “sensitivity to cultural differences and diversity among patients and families”-
- “an understanding that strong integration skills are needed”

These results were virtually identical with more agreement than strong agreement.

Under “management” there is

- “the ability to accurately interpret team members’ values and perspectives.”-most agreed however 36% selected neither or disagreed. This was surprising and together with other responses may reflect a reticence to go beyond traditional defensive professional boundaries in understanding other team members’ values and perspectives.

Under Professional Culture there is

- “Recognition of the boundaries of each profession’s contribution”- a majority agreed however 38% selected neither or disagreed (most in neither). This result was confounding and confirmed an area of disagreement worthy of future research. There is a clear difference between those who wish to cross boundaries and engage in interdisciplinary activity and those who prefer a more structured boundary respectful environment.

Under “integration” there is
“revision of opinions and recommendations in light of new information and insights from other professions”- Equal strong agreement and agreement.

**Communication Channels**: Distribution of this survey through professional organizations is an example of communication channels at work.

Under “a balanced approach” there is

- “an understanding of organizational communication requirements”-a majority agreed, followed by strongly agree with 18% selecting neither. This is an underlying quality part of understanding client culture yet crucial.

Under “professional culture” there is

- “recognition of how one’s perspective may influence and / or distort the process”-most responders agreed. This recognizes the role of self-knowledge in determining that the practitioner may become their own problem.

Under integration there is

- “the ability to perceive the strategic vision of the healthcare organization”-two thirds of responders strongly agreed with the importance of marching to the same goal is important.

**Diffusion**:

Relevant attributes include
“the ability to justify a balanced approach solution to all parties” - all responders strongly agreed or agreed. The more parties embrace solutions as being in their interest the more diffusion can take place.

“passion-having a particular glow or enthusiasm” - all responders strongly agreed or agreed. When practitioners are passionate their enthusiasm is contagious enabling diffusion.

The author is hopeful this thesis and its topic “qualities of excellence” will inform practitioners in this field and create waves of influence for the better.

Innovation.

Attributes included

- “to think outside the Box” - ranked in the center in terms of importance.
- “to think critically about complex issues” - ranked most highly in the top 30%.
- “to be highly creative” - ranked lowest in terms of importance.
- “creativity-able to use the imagination to develop new and original functional ideas or things” - responses selected as very important or extremely important.

These results may be the byproduct of when “hard” and “soft” qualities are ranked together, cultural bias demonstrates itself in preferring “hard” over “soft” even in the case of virtually identical items. For example, “creativity” (with explanation) is said to be important while “to be highly creative” (without explanation) is ranked lowest.
Questions included under the Innovation section

- “analysis of best practices and innovations in healthcare design
- “creation of new designs for improving the quality and safety of healthcare environments”
- “design results should complement efficient healthcare processes”.

All three -strongly agreed with slightly less agreeing. Results were virtually identical. Clearly this is considered an important quality of excellence.

Time:

Under “innovation” there is “design should incorporate a life-cycle perspective” for which there was almost unanimous agreement.

Under”general characteristics” there is “excellence is a dynamic developed with time”. Most responders selected strongly agree and agree in almost equal numbers with 20% selecting neither or disagree.

On time, or punctuality was added by a responder as a missing survey quality.

Shared attributes include “listening”, the starting place for innovation and diffusion.
Chapter 8

Conclusion

Where will future healthcare design practitioners come from and how will they be educated is a challenge confronting the field of healthcare design. While the evolution of research-based design for healthcare facilities has grown since the 1980’s, how healthcare designers should be educated remains an area with a scarcity of research to support it. To educate well it is important to understand the personal qualities a graduating student is expected to possess. Little is known about the qualities that determine excellence in healthcare design practice. Excellent qualities can be understood through a survey where healthcare design practitioners select and rate excellent qualities they have observed in practice. A critical evaluation of desired qualities of excellence may allow both educational institutions and industry to understand and select best practices for educating and maximizing potential of future healthcare designers. A unique opportunity exists to focus educational aspects of healthcare design and to set a direction for future design education.

On the basis of research, the belief is that this is the first attempt to define excellence in healthcare design from within the field. Responders’ own understanding is used to judge aspects of practice in determining qualities of excellence within their own field of expertise, the field of healthcare design. Survey sample results have begun to provide guidance towards a more complete understanding of qualities of excellence within healthcare design due to variety of respondents and range of questions.
The review of literature revealed that qualities of excellence or competency are pervasive and occur in many different settings and fields. Humans are neurologically divided creatures with hard and soft competencies playing different roles. Emotions play a central role in judgment and decision making; many qualities are closely linked to the emotions. Emotion is not opposed to reason; emotions assign value to things and are the basis of reason.

Excellence appears to be a set of qualities that transcends any one definition, but in this context takes on a high performance expectation. Qualities cannot be measured in isolation but must be considered as a whole due to their interdependency. Personal or difficult to explain underlying knowledge, rather than explicit knowledge is a characteristic of qualities. Informed use of rules of thumb, intuition, and pattern recognition are all examples of qualities in application. Technicians are easier to educate than healers and healthcare designers are healers through their responsibilities. Education offers the pathway to learn and disseminate knowledge about qualities so they can be cultivated shortening the learning cycle. Excellence develops over time in a similar way to a purposeful habit, but is intentional and not simply a byproduct of experience.

The interplay of specialist knowledge and desirable behaviors is a characteristic of fields and design professions in general. Important qualities can be seen as enablers for other attributes, such as communication acting as an enabler for many other qualities; essential and part of their interdependent nature. Classification of qualities is important in determining which can be considered excellent. Many characteristics of excellence are personal qualities which cannot be taught easily. Success seems to depend on the
interplay between individuals and their surroundings. It is through becoming intimate and testing with context that learning and depth of understanding occurs; rules based learning pales in comparison as it is one-dimensional.

The NAAB and CIDA guidelines were examined as points of comparison. Areas where qualities education might be incorporated in the future were identified, and an understanding gathered of the way current learning is framed. One approach towards promoting qualities in students suggests positioning qualities for implementation in specific workplace contexts. Education environments structured to foster excellence offer incubator-like potential to foster learning in this area. The design studio lends itself to this form of learning.

A lack of research on qualities in the area of design was noted although work by Pable, Meneeley and others touches on the topic of less objective methodologies and benefits to designers. Work by Pink, Brooks, Goleman and others lays groundwork for appreciation of qualities in public life. Much of culture is unstated and underlying as are qualities in influencing lives. Revolutionary in its potential and necessary if design leadership is not to be abdicated, EBD has given healthcare design a scientific basis.¹⁸⁹

This thesis expands on the deficient body of knowledge concerning qualities of excellence within healthcare design. Research has expanded beyond healthcare design in search of possible attributes for confirmation through survey instrument responses. Professional organizations and healthcare design education are briefly explored

¹⁸⁹ Reference description of architecture’s abdication of key aspects of its practice on p.49 as a precedent. D. Canter Why Architecture is necessary, RIBA Journal vol. 84, June 1977 :261
separately from the literature review as precursors to further research, the framework for which is contained within the author’s healthcare education diagrams (p.65-68).

Survey results confirm that qualities of excellence exist, are operational within the healthcare design field and can be identified. Further they are considered very important to matters of practice. A majority of the attributes listed were confirmed with a few attracting less support from responders. The abilities to listen and restate, to think critically and to see the big picture were ranked highly. Integrity, accountability, flexibility and empathy were also highly ranked. Teamwork aspects and having a collaborative mentality were highly rated. Sensitivity to patient and family issues, intellectual capacity and current knowledge were considered important by responders. Having a balanced approach and knowledge of specialized requirements also followed the pattern of being considered important. In examining management issues there was more disagreement concerning issues such as the ability to interpret other team members’ values and perspectives. Professional cultures also had less agreement concerning recognition of professional boundaries and the concept of a common language matching health concepts to design. Integration and the need for strategic vision was rated highly. Under Innovation, best practices, creating new designs that complement efficiency also was rated highly.

Qualities attracting less support had either a client operational focus or were in some way related to relaxing or crossing personal boundaries. Some might not initially have appeared to be of direct concern to healthcare designers and others would require
relaxation of protective measures and vulnerability to be effective. The latter underscores a challenge of interdisciplinary collaboration.

Among ranking questions integrity and listening were the qualities most highly valued. Less valued were creativity and details. Understanding other professions and self-reflection were also ranked less highly. There was movement in the middle of the rankings when two comparative methods were used on the same attributes suggesting a lack of certainty, interdependence and the importance of context.

Universal agreement occurred concerning the value of collaboration, patient-centric practice, use of common language, understanding of client strategic vision, and importance of innovation. Less agreement occurred concerning clinical practice, materials supply knowledge, and organizational communication requirements, all client driven concerns. The least agreement occurred concerning team member values and perspectives, independent practice silos, professional boundaries and cultural change with robust interventions. This appeared to reflect a concern with maintaining boundaries and taking a less activist approach in introducing change.

Review of general characteristics questions required more thought and perspective from responders and resulted in more uncertainty. Although it was heartening to see some agreement with the anesthetist study conclusions it was perhaps too much to expect full agreement across professional boundaries.

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Experience with strong service was the most widely cited design practice type, followed closely by collaborative and practice centered. Two thirds of responders were female with half being interior designers and one third architects. Over half had masters degrees. Half of responders had 25+ years of experience, with 28% from 16-25 years experience, and 21% from 6-15 years experience. In this respect the sample was highly representative. Ages of responders correlated these levels of experience.

There was little of note that was statistically significant; most of the analysis occurred on the descriptive side and the sample results were stable. The small sample size for this research study 42 of 252 is due perhaps to limited prior preparatory contact with respondents and difficulty in convincing busy professionals to set aside fifteen minutes to fill out a survey from a stranger. The busyness factor may be a possible underlying reason as well as other possible reasons.

Response rate of 17 % was less than the 30% (based on online professional marketing services results) the author had found in online research. In retrospect this was an optimistic number as numerous factors affect online survey response success. Nevertheless alternate survey approach options that would have met the criteria are to the best of the author’s knowledge not available .The author is most grateful for the efforts and contribution of all who participated.

The fact that responders self reported is a possible limitation of this thesis. Future researchers should consider confirmation of actual meaning of data through focus groups
or responders or perhaps random phone interviews with responders. This would help to account for the meaning of actual responses and allow for more accurate understanding and measurement of data.

Lack of a significant statistical difference in the data is not critical as the most important information came from qualitative analysis, and corresponds with the less objective nature of qualities and attributes. This result may indicate it is not necessary in this instance to move beyond confirming the validity of data in search of a quantitative solution.

Results of this research study will provide a foundation for further and continued research in the area of healthcare design education through academic settings and professional continuing education. Further research is essential before solid conclusions can be determined on this topic. As a component of excellence, research provides an opportunity for self-development and also leads to the production of new knowledge.

Applications of this study are diverse and could well include other design professions and fields as well as other professions as concerns people in general. Qualities are present and active in all aspects of life enabling excellence. They deserve consideration in all aspects of education and life if life is to be lived to the full; an empathetic, creative, confident approach is life-enhancing. In examining categorized qualities less than half are exclusively applicable to healthcare design indicating potential use in other settings. More subtle is the interplay between qualities and how more general types, such as communication provide a basis for more specific types, such as “having a
collaborative mentality” or “speaking a common language”. This interdependence makes it more difficult to separate qualities and educate for them as it becomes more of an all or nothing proposition.

The most distinguishing characteristic has been hesitancy to enter into discussion concerning qualities in public discourse. The suspicion with which matters of emotion and intuition have been regarded has resulted in an amputated sense of self where those aspects are socially repressed. Papper remarked that the acceptable had to become unacceptable before change could occur. With the recent emergence of research on the subjective perhaps the opportunity to regain balance is at hand.

Changes in medical equipment technology, delivery models and insurance reimbursement have had major impacts on the size, design and complexity of current healthcare buildings and show no signs of decreasing, leading to a need for excellence in healthcare design practice.

The greatest potential area of immediate application for this research is in the field of healthcare design, academically and within professional continuing education. No doubt there is also application in interdisciplinary settings which could add heuristic value. Potential healthcare design business applications include continuing education, personal development, evaluation of staff and development of distinguishing characteristics to be sought in the recruitment and hiring process.

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This research is important to architects, design practitioners, educators, clients and anyone else with an interest in the field of healthcare design. It also may have value for professionals in other fields considering similar topics in their professions. The process of giving form to the healing experience, making judgments in application, and learning how healthcare design practitioners are shaped is intriguing. What ultimately determines whether practitioners become successful are environmental influences such as culture, community, family, or generation. Common to these approaches is the sense that higher level cognitive competencies arise in appropriate environments.192

Excellent individuals seem to be those who respond well to challenges and are disposed to reflect on, and learn from them. For those in practice, these findings offer a framework for appraisal and continuing professional development. This would enable practitioners to assess where their strengths are and how their career development might be directed. Healthcare design skills can be harnessed for the benefit of the individual and the field as a whole.

Appendices provide additional supporting documentation for the survey, exhibits and statistical tables.

This thesis has researched the qualities necessary to demonstrate excellence in the practice of healthcare design. As perhaps the first study of its kind on this topic in this field a steep learning curve is to be expected. Previously identified limitations should be seen in this light, as stepping stones or seeds towards paths of future exploration with this

thesis providing a map of sorts. Harnessing the potential of EBD, understanding complexity of modern medicine, and remaining current amidst the explosion of information remains a great challenge for healthcare designers. Richard Koshalek has characterized designers as “the alchemists of the future”\footnote{Daniel H. Pink, \textit{A Whole New Mind: moving from the information age to the conceptual age}, 70}, translated “to separate and bring together” a trait that understanding through qualities of excellence makes possible. The ability to practice in an excellent way through cultivation of qualities of excellence provides a rich pathway for healthcare design practitioners.

**Summary of Contributions**

The following are responses to the hypotheses (\textit{shown in italics}) put forward in this thesis.

1. \textit{If there are qualities of excellence for healthcare design then they must be identifiable.}

True. Responders through survey results overwhelmingly identified qualities as being extremely important to healthcare design practice. Most responders understood and agreed with definitions proposed in the survey.

2. \textit{If trust is to occur then accountability and integrity must be present.}

True. The survey confirmed accountability to be an important quality for excellent healthcare designers and integrity as the single most important quality in rank order.

\footnote{Daniel H. Pink, \textit{A Whole New Mind: moving from the information age to the conceptual age}, 70}
3. If ability to manage complexity and ability to anticipate problems and solutions are present then qualities of excellence must be present.

True. Survey respondents responded affirmatively although “complexity” was ranked in a split manner with high and low rankings. “Anticipate” was ranked in the middle of qualities.

4. If ability to perceive the strategic vision of a healthcare organization exists then qualities of excellence are present.

True. Two-thirds of survey respondents strongly agreed, one-third agreed in confirming the importance of “perception of strategic vision”.

5. If the ability to be highly creative and see the big picture is present then qualities of excellence are present.

True. The survey ranked this ability as one of the most highly ranked qualities.

**Future Research**

The following thesis themes stand out in terms of future research possibilities and are addressed individually:

*Where and how will future healthcare designers be educated?* This is the primary thrust of future research beyond this thesis. The healthcare education diagrams located in Chapter 5, (figures 15-18)’Education’, provide an outline of the relationships between academic and continuing education approaches. Further research concerning existing
healthcare design educational programs and proven educational approaches to teaching qualities of excellence could be explored. A healthcare design curriculum incorporating and based upon qualities of excellence within healthcare design is a possible research goal.

Through understanding what these qualities are, goals and ability to measure outcomes of healthcare design education may be determined. Epstein and Hundert have said that performance is measurable but that competencies are not (inferred qualities). This statement may or may not include excellence which needs to be investigated as a measurable entity. Can qualities be measured in such a way that this can be used to measure educational outcomes within an educational curriculum?

Design solutions as hypotheses or predictions. Similar to the pebble studies that the Center for Health Design has initiated it is important to benchmark information in order to learn from it and explain it to others. Design solutions if approached as hypotheses or predictions can accelerate the learning cycle by being designed as experiments with results, post occupancy evaluations and benchmarking.

Can healthcare design be learned “just in time” on the job (and how does this affect the practice of excellence)? Is healthcare design an adjunct to basic design knowledge and something that can be acquired by way of a “rule or building code book” or does it require qualities that take time, experience and separate focused learning to acquire. While having the ability to sample a number of different specialties is helpful to design students, interns, and junior designers, eventually specialization may be necessary to
produce work that can be billed at a professional specialist rate. Related questions are whether today’s healthcare design firms continue to have the ability to individually train and groom staff from a beginning level or whether the expectation is for the new employee to “hit the ground running” in making an immediate contribution.

*How does healthcare design specialized education occur once maturity and passion have found each other?* This question has several aspects. The healthcare design specialized education portion relates to the healthcare education diagrams located in Chapter 5, (figures 15-18) and those future aspects as outlined in the first item in this section. Maturity could occur at any point but might well be related to age and experience, making it less likely at the undergraduate level. Passion is a very individual characteristic which could occur at any point but which needs to be sustained rather than fickle to provide determination and perseverance to stay with education. How maturity and passion find each other could be the subject of a survey of healthcare professionals or perhaps even other specialists incorporating stories of how they found their specialty.

*What contributes to a balanced sense of identity?* With a social science slant, this study would focus on the “soft” and “hard” qualities categorizing them into those that are not excellent, enablers, and any other characteristics taken on. It would investigate why there is a sense that current culture is out of balance and try to determine what a balance of qualities looks like, might result in, and potential benefits.

*Diffusion of innovations measure growth in healthcare design and formative educational demand.* This study would involve comparing growth in healthcare design demand over
time with the Diffusion of Innovations growth curve and comparing plots to determine where on the growth curve healthcare design currently lies and what differences if any are present. Demand for healthcare design education in an academic setting could also be measured and traced in comparison. It might also be possible to measure continuing education demand in a similar way.

*Which contexts are most conducive to excellence? Areas of practice that are difference makers.* This study would survey healthcare design practitioners identified as having excellent qualities by their peers and ask them to self identify areas of excellence and qualities present in practice in those areas. Contexts would be compared among practitioners with excellent qualities to determine if noticeable context patterns emerge. In addition areas of practice would be compared to determine if some areas of practice have a correlation with qualities of excellence practice.

*A way to accelerate the design feedback loop in architecture ensuring a legacy for this field’s pioneers.* An examination of why the feedback loop is slow in architecture or design describing how the process operates. Impediments to learning would be identified and differentiated into those that are structural, e.g. longevity of building process, and those that can be more easily addressed. A case study on the Center for Health Design’s Pebble initiative would provide a current interdisciplinary benchmarking initiative example. The Pebble initiative operates on a shared knowledge basis so that designers don’t have to wait until their firm undertakes a project type to learn, but can learn from the experiences of others. This is one way to accelerate the feedback loop in design.
It is the hope of this thesis to generate a ripple effect in healthcare design research and that the interest of others will be kindled to pursue further understanding of qualities of excellence in healthcare design.
Chapter 9

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Chapter 10

Appendices
**Figure 21**  Anesthesia Study - Initial Categories of Responses

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of responses</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>25</td>
<td>The ability to educate and inspire peers, trainees, medical students, and other clinical staff. Taking the time to teach. Enthusiasm to teach all corners. A talent for teaching. Inspirational to others. Able to express ideas and concepts clearly, both to individuals and groups.</td>
</tr>
<tr>
<td>Clinical skills</td>
<td>22</td>
<td>Demonstrates professional aptitude in giving a good anaesthesia. The capability to administer an anaesthetic smoothly, safely, and sickly in both complex and routine circumstances. Manual dexterity and technical competence.</td>
</tr>
<tr>
<td>‘Pull their weight’</td>
<td>21</td>
<td>Willing to ‘go the extra mile’, Pulls his/her weight in the department, not necessarily head of department, but a reliable and hard-working member who can be called upon to help when needed. Reliability—those who habitually offer to help out in times of crisis—that is, short-term notice of sickness for an call cover.</td>
</tr>
<tr>
<td>Innovative/original</td>
<td>21</td>
<td>Flexibility of thought and actions. Unafraid to challenge established ideas. A willingness to innovate, provided that the value and safety of the changes can be proven. Creativity (setting up new services, changing from week to strong service provision, thinking of new ways to provide excellent service for patients).</td>
</tr>
<tr>
<td>Knowledge</td>
<td>20</td>
<td>Contemporaneous in general and specialist area of practice. Intellectual capacity and ability to integrate knowledge with skills. Relevant background knowledge and ability to apply it. Being up-to-date with current practice, drugs, techniques, literature, and adhering to the recommended standards of practice.</td>
</tr>
<tr>
<td>Leadership</td>
<td>17</td>
<td>Can interact with, or lead, a team. A team player who is able to step up as team leader in a difficult situation. Enjoying good professional relationships within the various teams that one works with.</td>
</tr>
<tr>
<td>Good communicator</td>
<td>16</td>
<td>Has ‘the common touch’, can communicate easily and clearly with all colleagues and patients. The ability to communicate clearly, politely, and effectively with both patients and staff. A collaborative mentality; able to communicate effectively with patients, relatives, and colleagues and to include others when making decisions.</td>
</tr>
<tr>
<td>Relationship with patients</td>
<td>15</td>
<td>Inspires patients’ confidence. Protecting the patient and acting in the patient’s best interest. Empathy towards patients and relatives. Impeccable bedside manner. Ability to form effective rapport with patients.</td>
</tr>
<tr>
<td>Liked and respected</td>
<td>15</td>
<td>They inspire trust and are trustworthy. They easily become the recipient of confidences. Ability to get on with colleagues and the theatre team. Above all is the person a senior anaesthetist turns to for help and asks to anaesthetize their spouse.</td>
</tr>
<tr>
<td>Well organized</td>
<td>12</td>
<td>The ability to choreograph an operating list so that all aspects run smoothly. Forward planner. On time and prepared. Organized and efficient. They have a method/systen.</td>
</tr>
<tr>
<td>Calm</td>
<td>12</td>
<td>In contrast. Calm under pressure. Emotional stability, calm in emergency, clear and quick thought processes, no panic, non-aggression but able to convey urgency when necessary.</td>
</tr>
<tr>
<td>Organizational efficiency</td>
<td>12</td>
<td>Makes efficient use of team. Timeliness—starting on time, efficient work practices, finishing on time, business awareness.</td>
</tr>
<tr>
<td>Experience</td>
<td>12</td>
<td>‘Out of programme’ experience. Broad background of specialties. Wide knowledge of anaesthetic practice, wide variety of techniques at one’s fingertips, wide exposure to different surgical specialties.</td>
</tr>
<tr>
<td>Flexile</td>
<td>11</td>
<td>Adaptable and able to anticipate. Has flexible approach. Able to adapt to unusual circumstances and defuse any tensions. Not rigid.</td>
</tr>
<tr>
<td>Enthusiastic/keen</td>
<td>11</td>
<td>Enjoy the job. Passion. Having a particular “glow”—being someone people like having around.</td>
</tr>
<tr>
<td>Alert</td>
<td>10</td>
<td>Global awareness of workplace and process. Observes/perceptive/situational awareness ‘the big picture’.</td>
</tr>
<tr>
<td>Other characteristics</td>
<td>9</td>
<td>Common sense approach. Consistent. Insight. High level of objectivity.</td>
</tr>
<tr>
<td>Research and audit</td>
<td>7</td>
<td>Experience of research techniques, presentations, publications.</td>
</tr>
<tr>
<td>Understands limitations</td>
<td>6</td>
<td>Readily asks for help (and offers it). Knows when to discuss with a colleague.</td>
</tr>
<tr>
<td>Decisive</td>
<td>5</td>
<td>Assertive. Positive decision maker. Appropriately confident.</td>
</tr>
<tr>
<td>Caring</td>
<td>5</td>
<td>Compassion. Has time to listen to patients.</td>
</tr>
<tr>
<td>Outside interests</td>
<td>4</td>
<td>Rounded person. Polyvalent.</td>
</tr>
<tr>
<td>Record keeping</td>
<td>1</td>
<td>Documentation impeccable.</td>
</tr>
</tbody>
</table>

| Total                       | 335                 |

|
### Linking emotional intelligence competencies to design education.

<table>
<thead>
<tr>
<th>Emotional Intelligence*</th>
<th>Design Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self Awareness</strong></td>
<td>• Teamwork</td>
</tr>
<tr>
<td>The ability to recognize one’s own moods and emotions as well as their impact on others</td>
<td>• Interpersonal Communication</td>
</tr>
<tr>
<td><strong>Self Assessment</strong></td>
<td>• Life-long Learning</td>
</tr>
<tr>
<td>A self critical attitude, recognition of one’s strengths and weaknesses</td>
<td>• Cross disciplinary Collaboration</td>
</tr>
<tr>
<td><strong>Self Confidence</strong></td>
<td>• A Questioning Attitude</td>
</tr>
<tr>
<td>A sense of one’s self-worth and capabilities</td>
<td>• Risk-taking</td>
</tr>
<tr>
<td>• Initiative</td>
<td></td>
</tr>
<tr>
<td><strong>Self Motivation</strong></td>
<td>• Passion</td>
</tr>
<tr>
<td>A passion to work for reasons that go beyond money or status</td>
<td>• Values Alignment</td>
</tr>
<tr>
<td>• Professional Goal Setting</td>
<td></td>
</tr>
<tr>
<td><strong>Empathy</strong></td>
<td>• Humanistic Design</td>
</tr>
<tr>
<td>Sensing others’ emotions, understanding their perspective and taking an active interest in their concerns</td>
<td>• Ethics</td>
</tr>
<tr>
<td>• Listening</td>
<td></td>
</tr>
<tr>
<td>• Interpersonal dynamics</td>
<td>• Communication</td>
</tr>
<tr>
<td><strong>Organizational Awareness</strong></td>
<td>• Systems Thinking</td>
</tr>
<tr>
<td>Understanding social dynamics, decision networks, and politics at the organizational level</td>
<td>• Client Communications</td>
</tr>
<tr>
<td>• Presentation Strategy</td>
<td></td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td>• Social Responsibility</td>
</tr>
<tr>
<td>Recognizing and a concern for meeting user, client, or customer needs</td>
<td>• Avoiding Egocentrism</td>
</tr>
<tr>
<td>• Behavioral based design</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 2. Linking emotional intelligence competencies to design education, Danko, Sheila Nurturing Whole Person Development and Leadership Through Narrative Copyright 2003, Interior Design Educators Council, *Journal of Interior Design* 29(2&2), 82-96*
Appendix-1. Recruitment e-mail

From: Roger Vitello

To: ${m://Email1}

Dear: ${m://FirstName}

This is a survey invitation for experienced healthcare designers and administrators to provide input as to what the key personal qualities of an excellent healthcare designer are as part of a research study on the topic. You are part of a select group invited to participate. This survey is part of a graduate degree thesis I am preparing in the College of Architecture at the University of Nebraska-Lincoln.

The online survey is user-friendly and you should be able to complete it within 10-15 minutes or less.
The deadline is Wednesday, March 16, 2011.

Your participation in this survey will help provide better information on the qualities of excellence to benefit professional understanding, assessment, emulation and education in healthcare design.

Your input is very important and your individual responses will be kept strictly confidential (used only for the purposes of research for this project). The survey is web-based and conducted by a reputable third party vendor. Your name will not be attached to any results.

I appreciate your willingness to participate and value your feedback. To thank you for your effort, you will receive a free electronic copy of my thesis including survey results.

To participate, please follow this link to the Survey:
${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

a) If you have any questions about the research, you may contact the researchers at Roger Vitello : 973-590-1806 (roger.vitello@huskers.unl.edu) or Katherine Ankerson at 402-472-0243 (kankerson1@unl.edu)
b) If you have any questions or concerns about the research, you should contact the UNL IRB office at 402-472-6965 or irb@unl.edu (IRB#20110311585 EX)

To be removed from this or any future mailings, please follow the link:
${l://OptOutLink}
Appendix-2: Reminder e-mail

(Issue- March 11th)

Subject: Key personal qualities of an excellent healthcare designer

Dear [Name],

I am gathering feedback for my thesis concerning the key qualities of an excellent healthcare designer, to help with better understanding the personal qualities of excellent healthcare designers. I have your e-mail address on a select listing of healthcare design practitioners and wanted to remind you about the survey sent on [date of deployment]. I value your opinions and will be using this valuable data to benefit professional understanding, assessment, emulation and education in healthcare design.

The survey should take no more than 10-15 minutes or less to complete, and your answers are strictly confidential. To access our survey, please click the link provided below.

Follow this link to the Survey: ${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
$ {l://SurveyURL}

Thank you for your time and I look forward to hearing from you!

Best,

Roger Vitello

a) If you have any questions about the research, you may contact the researchers at Roger Vitello: 973-590-1806 (roger.vitello@huskers.unl.edu) or Katherine Ankerson at 402-472-0243 (kankerson1@unl.edu)
b) If you have any questions or concerns about the research, you should contact the UNL IRB office at 402-472-6965 or irb@unl.edu (IRB#20110311585 EX)

Follow the link to opt out of future emails:
$ {l://OptOutLink}
Appendix-3: Thank you e-mail

(accompanying electronic copy of thesis and survey results)

**Subject:**

UNL Graduate Research on:

Defining Excellence in Healthcare Design: The Role of Personal Qualities

**Body:**

Thank you for participating in my research study. Your responses and time are greatly appreciated.

Attached please find an electronic copy of my thesis as requested which contains results from the survey you participated in.

If you have any questions concerning the study or results, please contact me or my faculty advisor Katherine Ankerson, at the address below.

Sincerely,

Roger Vitello

roger.vitello@huskers.unl.edu

Katherine S. Ankerson

kankerso@unlnotes.unl.edu
Appendix-4: IRB Approval

-----Original Message-----
From: bfreeman2 <bfreeman2@uni.edu>
To: kankerson1 <kankerson1@uni.edu>; rivitello <rivitello@aol.com>
Sent: Fri, Mar 4, 2011 9:30 am
Subject: NUgrant Message - IRB Project Approved

Your project has been approved by the IRB.

Project Title: Defining excellence in healthcare design: the role of personal qualities.

Approvers Comments:
Mr. Vitello and Dr. Ankerson,

Your project has been approved. You are authorized to begin data collection.

1. Please include the IRB approval number (IRB# 20110311585 EX) in the emails to students. Please email a copy of these messages to irb@uni.edu for our records. If you need to make changes to the messages please submit the revised messages to the IRB for review and approval prior to using them.

Your official approval letter will be emailed to you and uploaded to NUgrant shortly.

Good luck with your research!

Becky Freeman
472-6127
bfreeman2@uni.edu

=================================================================
This message has been sent to you through NUgrant. To view project form you can click the link below.

Link: https://nugrant.uni.edu/irb/projectDetails.php?ID=11585

If you have any NUgrant questions you can contact nugrant@uni.edu for help.

NUGrant | University of Nebraska-Lincoln Office of Research
nugrant@uni.edu
nugrant@uni.edu | nugrant@uni.edu | nugrant@uni.edu | nugrant@uni.edu | nugrant@uni.edu | nugrant@uni.edu | nugrant@uni.edu
## Results Analysis Tables

### Question 1 response table

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<th>#</th>
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<th>1</th>
<th>2</th>
<th>3</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>Responses</th>
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<td>1</td>
<td>to listen to and restate issues effectively</td>
<td>18</td>
<td>3</td>
<td>11</td>
<td>3</td>
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<td>2</td>
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<td>to anticipate change</td>
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<td>5</td>
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<td>6</td>
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<td>0</td>
<td>1</td>
<td>3</td>
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</tr>
<tr>
<td>3</td>
<td>to anticipate problems and solutions</td>
<td>0</td>
<td>2</td>
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<td>5</td>
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<td>4</td>
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<td>6</td>
<td>4</td>
<td>1</td>
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</tr>
<tr>
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<td>to think “outside of the box”</td>
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<td>2</td>
<td>1</td>
<td>5</td>
<td>3</td>
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<td>to think critically about complex issues</td>
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<td>2</td>
<td>1</td>
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<td>5</td>
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<td>2</td>
<td>1</td>
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<td>0</td>
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<td>to identify safety and quality outcomes</td>
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<td>-</td>
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<td></td>
<td>Question-2 Likert scale</td>
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<td>Very Important</td>
<td>Neither</td>
<td>Important nor</td>
<td>Very Unimportant</td>
<td>Not at all</td>
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### Section-D Question-4: Teamwork (3 questions):

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### Section-D Question-18: Patient/ family sensitivity (2 questions):

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<td>Awareness of the need for patient privacy.</td>
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### Section-D Question-19 Knowledge (6 questions):

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<td>Having a broad background of experience and wide exposure.</td>
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<td>Intellectual capacity and the ability to integrate knowledge with skills.</td>
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### Section-D Question- 20  A Balanced Approach (6 questions):

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<td>An understanding that strong integration skills are needed.</td>
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<td>Specialized area requirements must be considered in the design process. (lab, Radiology, Pharmacy, Records, etc.)</td>
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**Section-D Question- 22** Professional Cultures (3 questions):

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<td>3</td>
<td>An understanding of cultural change and the need for robust interventions.</td>
<td>7</td>
<td>20</td>
<td>12</td>
<td>0</td>
<td>1</td>
<td>40</td>
<td>2.20</td>
</tr>
</tbody>
</table>

**Section-D Question- 23** Integration (3 questions):

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Responses</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Recognition of the boundaries of each profession's contribution.</td>
<td>5</td>
<td>20</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>40</td>
<td>2.35</td>
</tr>
<tr>
<td>2</td>
<td>Speaking a common language, the ability to match healthcare concepts to the language of design.</td>
<td>18</td>
<td>19</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>1.63</td>
</tr>
<tr>
<td>3</td>
<td>Recognition of how one's own perspective may influence and / or distort the process.</td>
<td>8</td>
<td>25</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>1.98</td>
</tr>
</tbody>
</table>
### Section-D Question- 24 Innovation (4 questions):

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Responses</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Analysis of best practices and innovations in healthcare design.</td>
<td>25</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>1.38</td>
</tr>
<tr>
<td>2</td>
<td>Creation of new designs for improving the quality and safety of healthcare environments.</td>
<td>26</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>1.35</td>
</tr>
<tr>
<td>3</td>
<td>Design results should complement efficient healthcare processes.</td>
<td>27</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>1.33</td>
</tr>
<tr>
<td>4</td>
<td>Design should incorporate a life-cycle perspective</td>
<td>20</td>
<td>19</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>1.53</td>
</tr>
</tbody>
</table>
**Section-E Question- 25** Characteristics (6 questions):

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Responses</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Excellence in design is a pre-requisite for excellence of any other kind in healthcare design.</td>
<td>7</td>
<td>18</td>
<td>10</td>
<td>5</td>
<td>0</td>
<td>40</td>
<td>2.33</td>
</tr>
<tr>
<td>2</td>
<td>Excellence in healthcare design is context specific, particular to that profession.</td>
<td>10</td>
<td>17</td>
<td>5</td>
<td>7</td>
<td>1</td>
<td>40</td>
<td>2.30</td>
</tr>
<tr>
<td>3</td>
<td>Excellence is manifest in all domains of an outstanding practitioner’s work.</td>
<td>15</td>
<td>17</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>40</td>
<td>1.98</td>
</tr>
<tr>
<td>4</td>
<td>Excellence is dynamic, developing with time.</td>
<td>16</td>
<td>15</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>40</td>
<td>1.90</td>
</tr>
<tr>
<td>5</td>
<td>Excellence changes focus throughout the stages of a practitioner’s career.</td>
<td>9</td>
<td>17</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>40</td>
<td>2.28</td>
</tr>
<tr>
<td>6</td>
<td>Excellence is possible even if there is a serious flaw in an aspect of one’s work.</td>
<td>2</td>
<td>9</td>
<td>9</td>
<td>13</td>
<td>7</td>
<td>40</td>
<td>3.35</td>
</tr>
</tbody>
</table>
### Question-6: Practice Attributes

<table>
<thead>
<tr>
<th>#</th>
<th>Answer</th>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single practitioner</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>Boutique</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>Medium size</td>
<td>13</td>
<td>33</td>
</tr>
<tr>
<td>4</td>
<td>Large</td>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>Architectural</td>
<td>24</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>Interior design</td>
<td>28</td>
<td>70</td>
</tr>
<tr>
<td>7</td>
<td>Arch. &amp; Engineering</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>8</td>
<td>Other</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Collaborative</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>10</td>
<td>Control</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>Cultivational (star driven)</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>Competency</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>13</td>
<td>Brains-strong idea</td>
<td>17</td>
<td>43</td>
</tr>
<tr>
<td>14</td>
<td>Experience-strong service</td>
<td>26</td>
<td>65</td>
</tr>
<tr>
<td>15</td>
<td>Execution-strong delivery</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>16</td>
<td>Practice centered</td>
<td>21</td>
<td>53</td>
</tr>
<tr>
<td>17</td>
<td>Business centered</td>
<td>10</td>
<td>25</td>
</tr>
</tbody>
</table>
Appendix- 6: Exhibit Survey

I am delighted that you have agreed to participate in this survey. The primary purpose is to identify the key qualities of an excellent healthcare designer; beyond competency and about excellence. Each of you has a connection with healthcare design and will have a unique perspective based upon your education and responsibilities. In working with excellent healthcare designers, what are the qualities that have impressed you, the professional artistry that would allow you to refer to that practitioner as excellent? I encourage you to reflect that perspective in your answers/responses.

This survey is part of a graduate degree thesis being prepared by the author on the topic of the qualities of excellent healthcare design professionals in the College of Architecture at the University of Nebraska-Lincoln.

Anticipated time to complete this survey is approximately ten to fifteen minutes.

If you know of another healthcare design professional interested in contributing to the research on this topic, please forward this survey to them by sending the e-mail you received with the embedded link.

If you are interested in receiving an electronic copy of the thesis upon completion, please write your e-mail address in the linear box at the end of the survey and a copy will be sent to your e-mail address.

Confidentiality. Any information provided in this questionnaire is recorded confidentially and will be used solely for the important purpose of research. Personal information provided including e-mail addresses will not be sold, traded, or transferred to any third party or entity. Responses will only be combined with others to learn about overall qualities of excellent healthcare designers with a goal of defining each section.

Survey Powered By Qualtrics
## Section D: To what extent are the following attributes important for an excellent healthcare designer?

Select and click the radio button on the right side that corresponds to the importance of each statement.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Very Important</th>
<th>Very Important</th>
<th>Not At All Important</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>empathy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>perseverance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>dependability</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>flexibility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>personal sensitivity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>creativity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>constancy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>integrity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>self confidence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>self-reflection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>competitiveness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>accountability</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>passion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>analytical/proactive</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>listening</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The table entries are placeholders and need to be filled in based on the survey responses.
Section C: Attribute importance ranking
Drag the attributes in the left side column up and down until they are ranked in order of importance from (one) at the top to (fifteen) at the bottom.

For example: Imagination (4)

- empathy
- perseverance
- dependability
- flexibility
- personal sensitivity
- creativity
- consistency
- integrity
- self-confidence
- self-reflection
- competitiveness
- accountability
- passion
- poise/composure
- listening
**Section G: Attribute importance ranking**

Drag the attributes in the left side column up and down until they are ranked in order of importance from (one) at the top to (fifteen) at the bottom.

*For example: Imagination  (4)*

<table>
<thead>
<tr>
<th>empathy</th>
</tr>
</thead>
<tbody>
<tr>
<td>perseverance</td>
</tr>
<tr>
<td>dependability</td>
</tr>
<tr>
<td>flexibility</td>
</tr>
<tr>
<td>personal sensitivity</td>
</tr>
<tr>
<td>creativity</td>
</tr>
<tr>
<td>consistency</td>
</tr>
<tr>
<td>integrity</td>
</tr>
<tr>
<td>self-confidence</td>
</tr>
<tr>
<td>self-reflection</td>
</tr>
<tr>
<td>competitiveness</td>
</tr>
<tr>
<td>accountability</td>
</tr>
<tr>
<td>passion</td>
</tr>
<tr>
<td>poise/ composure</td>
</tr>
<tr>
<td>listening</td>
</tr>
</tbody>
</table>
### Section-D. To what extent do you agree that each statement below is important as it relates to an excellent healthcare designer?

Select and click the radio button on the right side that corresponds to the importance of each statement.

#### Teamwork

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having a collaborative mentality.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognition of a range of perspectives and complexity within healthcare organizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An understanding of the values and thought processes of others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Patient/ Family sensitivity

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The ability to value, seek, and integrate patient and family preferences.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness of the need for patient privacy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section D. To what extent do you agree that each statement below is important as it relates to an excellent healthcare designer?

Select and click the radio button on the right side that corresponds to the importance of each statement.

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being well read and having professionally current knowledge.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having an understanding of clinical practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having a broad background of experience and wide exposure.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intellectual capacity and the ability to integrate knowledge with skills.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of materials resupply processes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The ability to interpret evidence-based research.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section D: To what extent do you agree that each statement below is important as it relates to an excellent healthcare designer?
Select and click the radio button on the right side that corresponds to the importance of each statement.

### A balanced approach

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition of the trade-offs in balancing individual patient needs with common design solutions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The ability to justify a balanced approach in solutions to all parties.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity to cultural differences and diversity among patients and families.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An understanding that strong integration skills are needed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialized area requirements must be considered in the design process. (Lab, Radiology, Pharmacy, Records, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An understanding of organizational communication requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Management

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The ability to accurately interpret team members' values and perspectives.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A commitment to break down independent practice silos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 1. To what extent do you agree that each statement below is important as it relates to an excellent healthcare designer?

Select and click the radio button on the right side that corresponds to the importance of each statement.

### Professional Cultures

<table>
<thead>
<tr>
<th>Recognition of the boundaries of each profession's contribution</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking a common language, the ability to mesh healthcare concepts to the language of design.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognition of how one's own perspective may influence and/or distort the process</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Integration

<table>
<thead>
<tr>
<th>Revision of opinions and recommendations in light of new information and insights from other professions.</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The ability to perceive the strategic vision of the healthcare organization.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An understanding of cultural change and the need for robust interventions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section D. To what extent do you agree that each statement below is important as it relates to an excellent healthcare designer?

Select and click the radio button on the right side that corresponds to the importance of each statement.

**Innovation**

<table>
<thead>
<tr>
<th>Analysis of best practices and innovations in healthcare design.</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree for Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creation of new designs for improving the quality and safety of healthcare environments.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design results should complement efficient healthcare processes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design should incorporate a life-cycle perspective.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Service Powered By Qualtrics®
### Section E: General Characteristics of excellence

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellence in design is a pre-requisite for excellence of any other kind in healthcare design.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellence in healthcare design is context specific, particular to that profession.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellence is manifest in all domains of an outstanding practitioners work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellence is dynamic, developing with time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellence changes focus throughout the stages of a practitioners career.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellence is possible even if there is a serious flaw in an aspect of ones work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Section F: Qualities and Practice

If there are any qualities of an excellent healthcare designer which you believe have been omitted from this survey please note them here.

<table>
<thead>
<tr>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Please check which of the following attributes apply to your practice:

- Single practitioner
- Boutique
- Medium size
- Large
- Architectural
- Interior design
- Arth. & Engineering
- Other
- Collaborative
- Cortical
- Cultivational (star driven)
- Competency
- Brainstorm idea
- Experience-driven service
- Execution-driven delivery
- Practice-centered
- Business-centered

**Design Philosophy Description:**

Please fill in the space below with a description for your practice.

*e.g., Approach each project through a sustainable viewpoint and use a modernist sparse design style*
Section C: Demographics.

Please fill out the following information. No answer choices are provided for those preferring to opt out of answering a question.

Gender

[ ]

Profession

- Architect
- Executive/Administrator
- Facilities Manager
- Interior Designer
- Nurse Manager
- Other

Specialization


Professional Affiliation

- AIA
- ACHA/AIA
- ACHME
- ADONE
- Other
- No Answer
Accreditation:

- AAHD
- ACHA
- EDAQ
- Other
- No Answer

Highest educational degree achieved:

University (s) attended:

Years of experience in practice:

Age:

If you are interested in receiving an electronic copy of the author's thesis (including analysis of the survey results) upon completion, please insert the e-mail address where you would like this sent on the line below and a copy will be sent to that address.
Thank You for participating in this survey. Your participation is greatly appreciated and most helpful.