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## **Information Design for Medical Innovation: Raising Student Awareness of Medical Design Potential**

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**Information Design for Medical Innovation**

Raising Student Awareness of Medical Design Potential

Brian W Rosenberg

A Thesis submitted in partial fulfillment of the requirements  
for the degree of:

Master of Fine Arts in *Visual Communication Design*  
School of Design  
College of Imaging Arts and Sciences  
Rochester Institute of Technology

18 December 2015

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**Thesis for the Master of Fine Arts Degree**

Visual Communication Design MFA Program  
School of Design  
College of Imaging Arts and Sciences  
Rochester Institute of Technology

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Thesis Title

**Information Design for Medical Innovation**

Raising Student Awareness of Medical Design Potential

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Committee Approval

Chris Jackson  
Chief Thesis Advisor, Visual Communication Design  
*Technical Component Resource*

Chris Jackson 12/18/15  
Signature of Chief Advisor Date

R. Roger Remington  
Associate Thesis Advisor, Medical Design  
*Subject Matter Resource*

R. Roger Remington 12/18/15  
Signature of Associate Advisor Date

Bruce Meader  
Associate Thesis Advisor, Information Design  
*Design Inquiry Resource*

Bruce Meader 12/18/15  
Signature of Associate Advisor Date

Brian W Rosenberg  
Master of Fine Arts Degree Candidate

Brian W Rosenberg 12/18/15  
Signature of MFA Candidate Date

Peter Byrne  
School of Design Administrative Chair

Peter Byrne 12/18/15  
Signature of Administrative Chair Date

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**Abstract**

Medical design has the power to improve, prolong and save lives. Medical professionals and patients throughout the world face critical problems that can be addressed with design solutions developed in an academic setting. International collaboration fostered by universities can be a source of unique technology, cultural development and natural resources that can aid in the discovery and delivery of medical solutions. Projects developed through university based initiatives exemplify how effective information design benefits medical design applications.

MEDdesign is a program initiative of the Vignelli Center for Design Studies at the Rochester Institute of Technology. Through this international program, design students solve medical problems proposed by a diverse range of healthcare professionals. These collaborations result in medical applications that improve healthcare and prolong life. Student awareness of the processes and benefits of this academic/professional model are needed in order to establish more collaborations and innovations in medical design.

The main objective of this thesis is to foster more involvement among newcomers to medical information design in the realm of academics. The attributes of effective information design can be applied in order to communicate important information about medical design initiatives. Proof of this concept will be shown by developing a visual language and educational tools that increase student awareness, understanding and involvement in this initiative. These educational materials will be comprised of both print and digital media including infographics, posters, leave-behinds, email blasts, web banners and articles featured on the MEDdesign website. The visual language and educational materials will serve as a template for communicating information about similar initiatives to students and institutions throughout the world.

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**Key Terms**

Academic Initiatives	Information Design
Awareness Campaign	Innovative Solutions
Design Students	International Collaboration
Educational Infographics	Medical Design
Healthcare Professionals	Student Awareness

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## Thesis Statement

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Design Inquiry	How can the attributes of information design benefit medical design initiatives?
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Personal Stance	Effective information design can increase student awareness, understanding and involvement in medical design initiatives.
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Proof of Concept	Information design will be used to develop educational tools that communicate the processes and benefits of the MEDdesign Initiative to design students at the Rochester Institute of Technology. These educational materials will be comprised of both print and digital media including infographics, posters, leave-behinds, email blasts, web banners and articles featured on the MEDdesign website. The visual language and educational materials will serve as a template for communicating information about similar initiatives to students and institutions throughout the world. These components could also exist as interactive assets, including short animations or interactive web applications. This wide range of possibilities allows this inquiry to contribute to a number of diverse fields, including design and healthcare in both academic and professional settings.
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Goals	Appeal to an audience Contribute to the field of design Defend a stance Develop a proof of concept Exemplify the power of design	Explore a design inquiry Inspire collaboration Propose a hypothesis Stimulate discovery Solve a design problem
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Objectives	Communicate information Develop a visual language Increase awareness Appeal to design students Produce educational tools	Promote involvement Provide rationale Research design topics Showcase projects Visualize processes
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## **Design Research**

Defining Concepts

Review of Literature

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Defining Concepts

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## Research Approach

This design research serves as a documentation of higher thinking design terms and concepts that directly influence the design methodologies exercised in this project. The objective of this design research and application is to pose a design inquiry, form an opinion and apply it to an area of interest. The design inquiry component is an exploration of information design and its ability to communicate in an effort to foster involvement. The area of interest involves the processes and benefits of a complex academic/professional model that benefits medical, social and academic aspects of design. The primary focus is on the exploration of modern design philosophies and practices that exemplify new understanding of information design in the medical arena.

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## Defining Design

The term "design" has rapidly evolved beyond the notions of traditional design. Its definition now encompasses disciplines based on visual aesthetics, an analytic problem-solving approach and the simple act of having intention in any given process. The term has developed in conjunction with the emergence of new design technologies and fields. It may seem like "design" is slowly becoming convoluted, but its growing definition only reflects the growing power that this term has and leads to higher levels of awareness and improved standards in society.<sup>1</sup>

"Everything is design."

Tom Peters<sup>1</sup>

"The fundamental soul of a man-made creation."

Steve Jobs<sup>1</sup>

"One definition is the intervention in the flow of events to produce a desired effect. Another is that design is the introduction of intention in human affairs. A third rather elegant description is that design moves things from an existing condition to a preferred one. This last one reduces the complexity of the idea, but I like all three definitions. Design doesn't have to have a visual component. Ultimately, anything purposeful can be called an act of design."

Milton Glaser<sup>1</sup>

<sup>1</sup> Richard Farson, *The Power of Design: A Force for Transforming Everything* (Norcross, GA: Greenway Communications, 2008), 34.

In his book *The Power of Design: A Force for Transforming Everything*, Richard Farson, Ph.D., states that Designers “represent the profession with the greatest potential to rescue us from the multiple disasters we face and even move us to a new level of humanity.”<sup>2</sup> Over the course of his career, Farson realized that even though psychology traditionally has a focus on the individual, the subject is always an instrumental part of groups (families, communities, etc.) that together form society. As a psychologist, Farson, recognizes that an individual’s physical context effects their behavior and that of their respective groups, therefore the design of a physical environment can in turn make significant contributions to society’s behavior. Farson’s understanding of the psychology of leadership and experiences with design led to his belief that “design is the approach most needed by all leaders to deal with the complexities and challenges of the future.”<sup>3</sup>

<sup>2</sup> Farson, *The Power of Design*, i.

<sup>3</sup> *Ibid.*, iii.

It is important to recognize the difference between solely market-driven business decisions and socially oriented professional outcomes in order to be less client driven and more socially responsible. In the corporate world an important goal is to increase the bottom line. In fact, the private sectors primary social responsibility is to make a profit in order to contribute to a healthy economy. Business leaders must satisfy investors every quarter and are restricted from making decisions based only on social implications. A market-oriented economy may be essential to our democratic system, but professionals must assume a greater leadership position in order to step away from the bottom line and solve greater social issues.<sup>4</sup> Applying professional design approach to business practices can potentially lead to economic growth and the benefits involved, such as a reduction in worldwide poverty.<sup>5</sup>

Design can often be a market-oriented business in the same way that an artist may be commissioned by wealthy clients. This is why design still fails to address major issues in the world. In a sense the client is paying for the designer to compromise their professional judgment. Therefore, a true professional will create a strong relationship with the client, gain a deeper understanding of each project and analyze who the true end-users are. They will provide solutions that serve the client's real needs and not their wants or demands for the sake of a paycheck. This relationship with the client is fundamental to any profession. We expect lawyers and doctors to give their best efforts in every case no matter who is paying them. The work of every design professional affects the public in some way and so the consequences of compromised design can affect society as a whole.<sup>6</sup>

Certain professions, including education and medicine are perceived as being so essential to the progress and well-being of our civilization that they are often subsidized with taxpayer monies. Design, seen more often as a business than a profession, also has the potential to serve the public good. Architects, interior designers and urban planners can solve the needs for better facilities, work environments and communities while reducing the ecological and economical costs. Industrial, new-media and graphic designers can solve the needs for better products, services, awareness and communication. Design has the ability to positively affect every issue in society including, pollution, poverty, illness, famine, crime, etc..<sup>4</sup>

4 Farson, *The Power of Design*, 19.

5 Ibid., vi.

6 Ibid., 24.

7 Ibid., 30.

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## Design Responsibility

In an effort to make a living and provide for their families, designers often put aside their personal beliefs and take on projects for financial gain. This can account for ineffective design such as urban planning that does not support a sense of community, packaging that makes unhealthy food look appealing and advertising that deceives. The market dictates which areas of society receive the care and attention of design. This form of commercial design does not serve to solve the social needs of the poor, hungry, sick or homeless. Therefore, these types of social needs will only be solved by the designer that can embrace their moral conscious and make monetary gain a secondary motive. It is the responsibility of those educated in design to make an impact not only at the drawing board, but on a higher level of involvement in society. As Farson simple puts it, "Our task is leadership."<sup>8</sup>

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## Metadesign

Design efforts that step beyond the average design application to solve more fundamental issues are considered "metadesign." The prefix "meta" can be defined as "a higher science of the same nature but dealing with more fundamental problems."<sup>9</sup> It is often thought of as the design of design. Tom Fisher, dean of the College of Design at the University of Minnesota is credited with comparing the concept of metadesign to public health. Individual needs are addressed in the doctor/patient relationship, but in public health the needs of many are addressed.<sup>10</sup> Farson even argues that metadesigners should be educated with a separate curriculum similar to the differences between medical and public health education. A similar situation is evident in architecture where health and safety are important considerations, yet global health is not central to the profession. Private architectural firms do not partner with philanthropic organizations that help provide shelter to those in need, simply because of economic limitations.<sup>10</sup>

In order to serve society, a metaprofessional approach to design is necessary. Professional goals, a leadership role and collaboration with other professions and resources elevates the practice of design to the design of the field itself. This potential to benefit so many aspects of our lives is why design should be publicly and fiscally supported in the same manner as education and medicine. In fact the importance of design lies in its ability to benefit all other professions and even improve how they are interconnected.<sup>11</sup>

8 Farson, *The Power of Design*, 9.

9 Ibid., 4.

10 Ibid., ix.

11 Ibid., 30.



"Information design is defined as the art and science of preparing information so that it can be used by human beings with efficiency and effectiveness. Its primary objectives are 1. To develop documents that are comprehensible, rapidly and accurately retrievable and easy to understand and to translate into effective action. 2. To design interactions with the equipment that are easy, natural and as pleasant as possible. This involves solving many problems in the design of human-computer interface. 3. To enable people to find their way in three-dimensional space with comfort and ease – especially urban space, but also, given recent development, virtual space."<sup>12</sup>

"The values that distinguish information design from other kinds of design are efficiency and effectiveness at accomplishing the communicative purpose."<sup>13</sup>

"There is no agreement that a practice called *information design* actually exists. Even those who acknowledge its existence find a unitary definition elusive. In order to systematize and pass along our knowledge about "how to design information" or "how to be an information designer," we need a reliable lexicon and tried-and-true theory backed up by case studies."<sup>14</sup>

<sup>12</sup> Robert Jacobson, editor. *Information Design* (Cambridge: MIT Press, 1999), 15.

<sup>13</sup> *Ibid.*, 16.

<sup>14</sup> *Ibid.*, 3.

Healthcare is one of the major professional fields essential to our societal infrastructure that could benefit significantly from the application of design principles. The United States has excellent medical infrastructure, doctors, technology and practices, but Americans are not the healthiest people compared to other developed countries. Modern medical practices are often wrongfully or improperly administered. Incorrect prescription, dose, surgery or other medical mistakes results in millions of hospital admissions. The majority of these adverse reactions and errors resulting in illness or death are never reported. Much of the cost of medical treatment is the result of billions that are tied up in insurance claims, court cases and reparation of medical mistakes. Medical malpractices account for more deaths than heart disease or cancer.<sup>15</sup> Clearly, there is a need for improved design practices in healthcare.

Until the last few decades the disabled (i.e. differently able) have been largely overlooked in society. Design achievements have brought better awareness, accommodation and mobility to a segment of the population that have been previously ignored. Simple design solutions such as handicapped parking spaces, access ramps, specialty vehicles and accommodating rest room appliances have had great benefit. Devices designed to help people with arthritis to open jars have helped an entire generation to better care for themselves. Complex designs have made an even bigger impact such as electronic prosthetics, colloquial ear implants and 3D printed prosthetics like the ones developed by students at the Rochester Institute of Technology.

Every design profession can directly benefit the healthcare field. Graphic and web designers can create better communication, information, legibility and visibility. Architects can improve the layout of hospitals in order to reduce the number of deaths that occur in the hallways and elevators. Interior design can reformat and organize hospital and operating rooms to reduce problems related to space, clutter, lack of equipment, etc.. Industrial design can develop medical tools and products for doctors, children, elderly, patients and their families.

Researchers have shown that educational environments with windows and natural lighting allow for better learning. Non-hierarchical work spaces with round tables and comfortable seating allow for more distributed, productive and informal communication in the work place. In a similar manner, designing public spaces for exercise and providing exposure to greenery in areas such as gyms and parks can promote the general public health. Stress is a major factor in health and can contribute to illness. Misinformation and poorly designed work spaces, classrooms and road systems are major causes of stress.<sup>16</sup> Simple designs that we take for granted such as touchless sanitizers and soap dispensers as well as signs that remind people to wash their hands, have prevented the spread of disease and saved countless lives. Even a well designed procedural checklist can prevent major errors in surgery. More widespread applications of design could make an even larger impact on health and wellness.<sup>17</sup>

<sup>16</sup> Farson, *The Power of Design*, 65.

<sup>17</sup> *Ibid.*, 6.

The person most responsible and impactful in one's health decisions is yourself. Most people use the internet as a resource before consulting a physician. In some cases the patient comes to learn more about a specific disease than their doctor. This online information could be better organized and led by medical experts.<sup>18</sup> Careful consideration of a person's environment, diet, amount of exercise and overall lifestyle is the most effective preventative measure in personal health. Information design can efficiently and accurately provide people with the knowledge and understanding needed to best take care of themselves and those dependant on them.<sup>19</sup>

A person has to balance information obtained from education, books, internet, professional opinion and, more frequently, secondary opinion. In the end they need to make the best decisions for themselves. The patient is the only interdisciplinary student in their personal health education. Thus, a patient-centered approach is the design philosophy that can make the most impact in healthcare only if balanced with the larger social implications of a design. A bottom-up approach would have us designing ways for those who have overcome disease and gone through medical treatment to be a resource to others. This is particularly true of mental illness as illustrated by the success of psychotherapy and self-help groups.<sup>20</sup>

<sup>18</sup> Farson, *The Power of Design*, 64.

<sup>19</sup> Ibid., 62.

<sup>20</sup> Ibid., 63.

Our education paradigm is extremely difficult to change and has been fundamentally the same throughout recent history. Changes that educational reformers are able to make in the classroom eventually fade and are consumed by the existing system. Technology is relatively slow to integrate into fields such as education. High dropout rates, functional illiteracy and the need for remedial education prove that the status quo is not acceptable. Socioeconomic class, geographic location and access to resources are stronger determinants of education in this traditionalist system. Therefore, in order to make real changes, it requires both educational reform as well as social change. Creating a better environment and situation for learning, easier communication with teachers and peers, better access to information and structure of that information are ways that design can make an impact.

“Information design, whatever its label, will enhance our society’s ability to collect, process and disseminate information and to produce understanding.”<sup>21</sup>

“What we need is not more information but the ability to present the right information to the right people at the right time, in the most effective and efficient form.”<sup>22</sup>

No one realizes that they need graphic design or that it is all around them. In fact, the more effective it is the less it is noticed. Designers are watchers, thinkers and doers. They observe imagine and express. They seek a constant creative stimulation. “The spring from which creativity flows must constantly be fed – through reading and observing through research, through experimentation.”<sup>23</sup>

21 Jacobson, editor. *Information Design*, 10.

22 Ibid., 16.

23 Roy Paul Nelson, “The Design of Advertising: An exploration of current practices and techniques” (*Design Management Journal* 13, no. 3, 1967), 17.

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Design Necessity

In 1973, the First Federal Design Assembly, was held in Washington, D.C. This assembly was one of the four initiatives comprising the Federal Design Improvement Program. The purpose was to bring design and government professionals together to upgrade the quality of Federal buildings and publications. The assembly defined 10 performance criteria that give precedence for effective design in every organization, including Federal agencies. This criteria illuminates the necessity of design in areas such as visual communication, interior design, industrial design, architecture and environmental design in order to improve communication, safety and efficiency.<sup>24</sup>

---

Performance Criteria<sup>21</sup>

- 1 That there are sound, proven criteria for judging design effectiveness.
- 2 That design is an urgent requirement, not a cosmetic addition.
- 3 That design can save money.
- 4 That design can save time.
- 5 That design enhances communication.
- 6 That design simplifies use, manufacture and maintenance.
- 7 That the design necessity is recognizably present in projects ranging in scale and complexity from a postage stamp to a highway system.
- 8 That the absence of design is a hazardous kind of design. Not to design is to suffer the costly consequence of design by default.
- 9 That, on any given project designers and Government officials have the same basic goal: performance.
- 10 That effective design of public services is itself an essential public service.

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Review of Literature

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## Review of Literature

A more extensive examination of this particular collection of resources strengthens one's understanding of the rationale behind information design and how it can be applied to the medical field. Analyzing the current state of academic initiatives involving medical design will help to accurately represent the processes and impact of these programs. The goal at this stage is to put the project into context, develop empathy for the audience and gain a better understanding of what others have done. This review of literature is divided up into sections based on the design inquiry into information design and the subject matter relating to academic initiatives.

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### Design Inquiry Literature

*Information Design*  
Robert Jacobson, editor  
MIT Press, 1999  
Cambridge, Mass.

This edited collection of articles covers the basics of information design, why it is important and how it is applied. This book illustrates the necessity of information design, its societal importance and how it has evolved into a profession. It touches on design theories such as sensemaking and wayfinding. It also includes the responsibilities and ethics involved in this new discipline and its future implications. This information is essential to understanding how to best apply information design in order to visually communicate effectively.

*The Power of Design:  
A Force for Transforming Everything*  
Richard Farson  
Greenway Communications, 2008  
Norcross, GA

The author explains the influence that design has on society and how design is a tool for coping with the challenges of a rapidly evolving world. He argues that the exponential increases in population, technology and industry creates a need for design. This book shows how design has and will continue to be instrumental in individual and planetary success. It recognizes the role of the designer in the big picture and their responsibility to society. These design philosophies can be applied to the medical field which is also a rapidly changing landscape of technology.



*An Introduction to Information Design*  
Kathryn Coates, Andy Ellison  
Laurence King Publishing, 2014  
London

This book covers the fundamentals of information design with a modern perspective. It clearly states what information is, why it is important and how it is used. It covers the major topics of design including defining an audience, using a grid structure, providing readability, creative exploration and multi-platform delivery. It is one of the few sources that talks about information design methods in the realm of new digital media.

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Subject Matter Literature

*Design for Care:  
Innovating Healthcare Experience*  
Peter H. Jones  
Rosenfeld Media, 2013  
Brooklyn, New York

This book gives precedence for applying effective design to many areas of the healthcare industry. The focus is on providing designers with practices, system thinking and research methods that allow for effective design solutions to evolving medical problems. It covers important considerations for approaching medical problems, such as patient-centered design, systemic design and design as caregiving. These arguments support the mission of every medical design initiative and prove that they are necessary to compensate with a rapidly changing field.

*The Design Necessity*  
Ivan Chermanyeff  
MIT Press, 1973  
Cambridge, Mass.

This casebook proposes a rationale for the necessity of design. There are 10 performance criteria that illustrate this necessity through a variety of case studies. These examples demonstrate design application to a range of fields such as communication, interiors, environments and architecture. This system of reasoning was developed for the First Federal Design Assembly in Washington, D.C. where designers increased administrators' awareness of the importance of design. This was one of four initiatives under the Federal Design Improvement Program, which focused on improving the quality of design in government applications, including Federal buildings and publications.

*Design Integrations:  
Research and Collaboration*  
Sharon Poggenpohl and Keiichi Sato, editors  
Intellect, The University of Chicago Press, 2009  
Chicago, IL

This is a critical look at the present and future of design research and collaboration. In chapter twelve, Judith Gregory gives an example of a complex model involving international and intercultural collaboration. This cooperative model is geared towards health information systems and shows the link between information and medical design. In chapter ten, R. Roger Remington explains an academic model involving three institutions of higher education. Remington discusses the complex relationship and challenges of national collaborations. This book gives an excellent analysis and context of interdisciplinary and cross-cultural design in higher education.

*Designing for the 21st Century:  
Interdisciplinary Questions and Insights*  
Tom Inns, editor  
Gower Publishing Limited, 2007  
Hampshire, England

This book showcases the research projects developed by the 21st Century Research Initiative. They are successful examples of collaborative design projects for health and wellness. Each project shows many instances of implementing design strategies such as spatial, sensory and people-centered design. There are medical design projects involving inclusive environmental design of health public spaces. This variety of design application in an academic setting demonstrated the versatility and potential of interdisciplinary design students.

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**Process**

Ideation

Development

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Ideation

## Ideation Process

The brainstorming process is crucial to creating context within a design. Idea generation and mind-mapping allows you to categorize terms and concepts, and draw connections between different content (Fig. 1). Gathering design resources and researching trends can inspire designs that are influential and communicate a common language to the design audience. Early icon exploration helps to provide unity throughout the project and clearly communicate the different aspects of the subject matter (Fig. 2). Generating mind-maps, icons and diagram sketches provides a framework from which to build visual style options for posters, cards and infographics (Figs. 3–5).

Figure 1: Mind-map

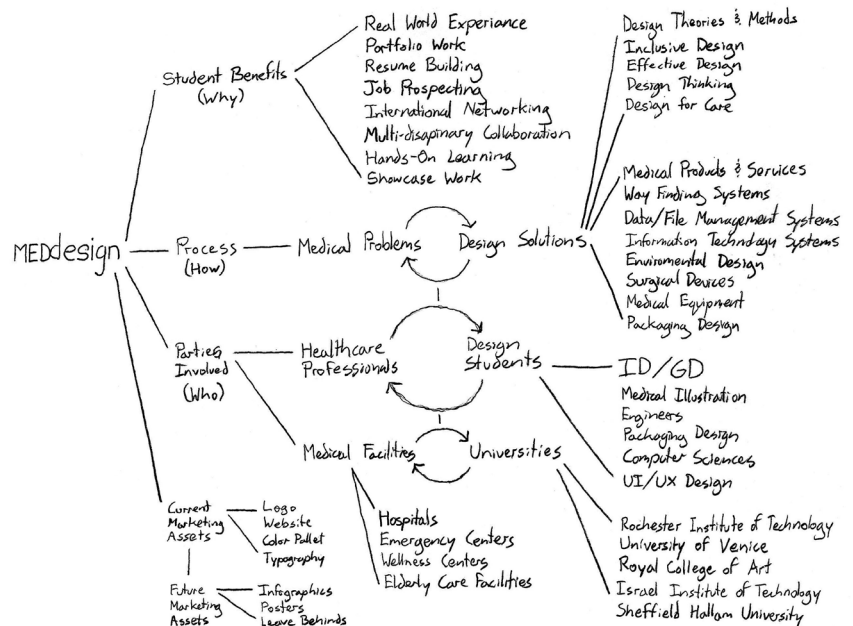


Figure 2: Icon Sketches

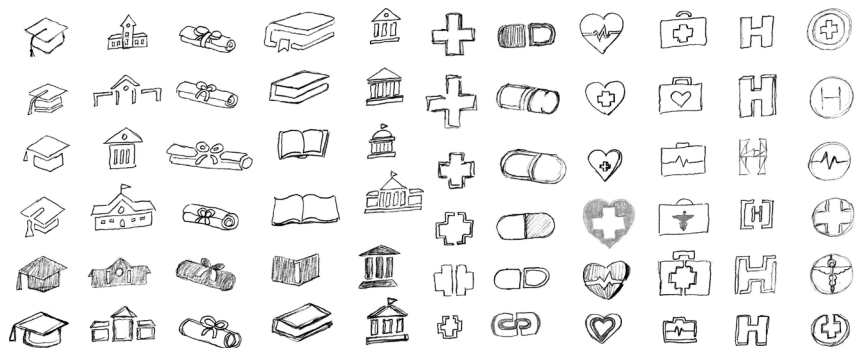


Figure 3: Diagram Sketches

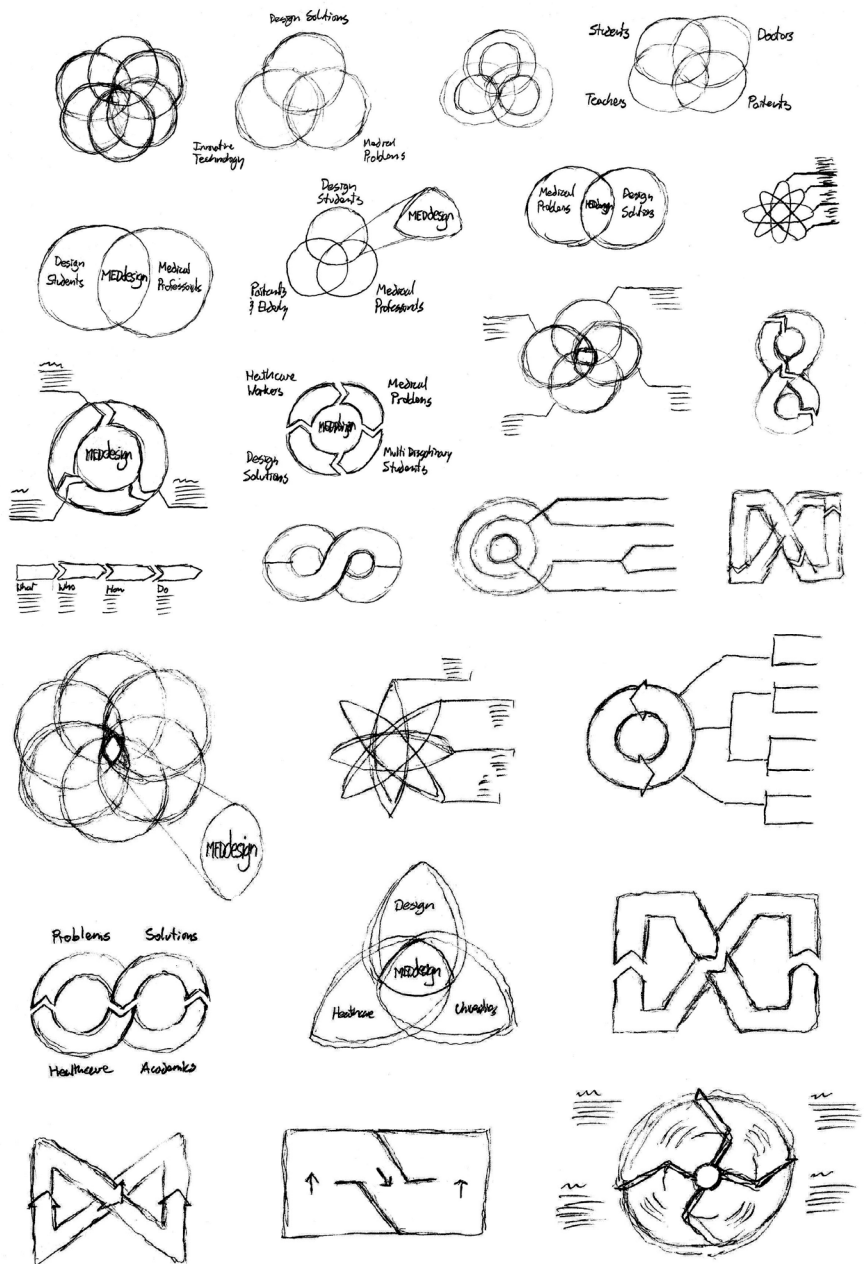


Figure 4: Poster Sketches

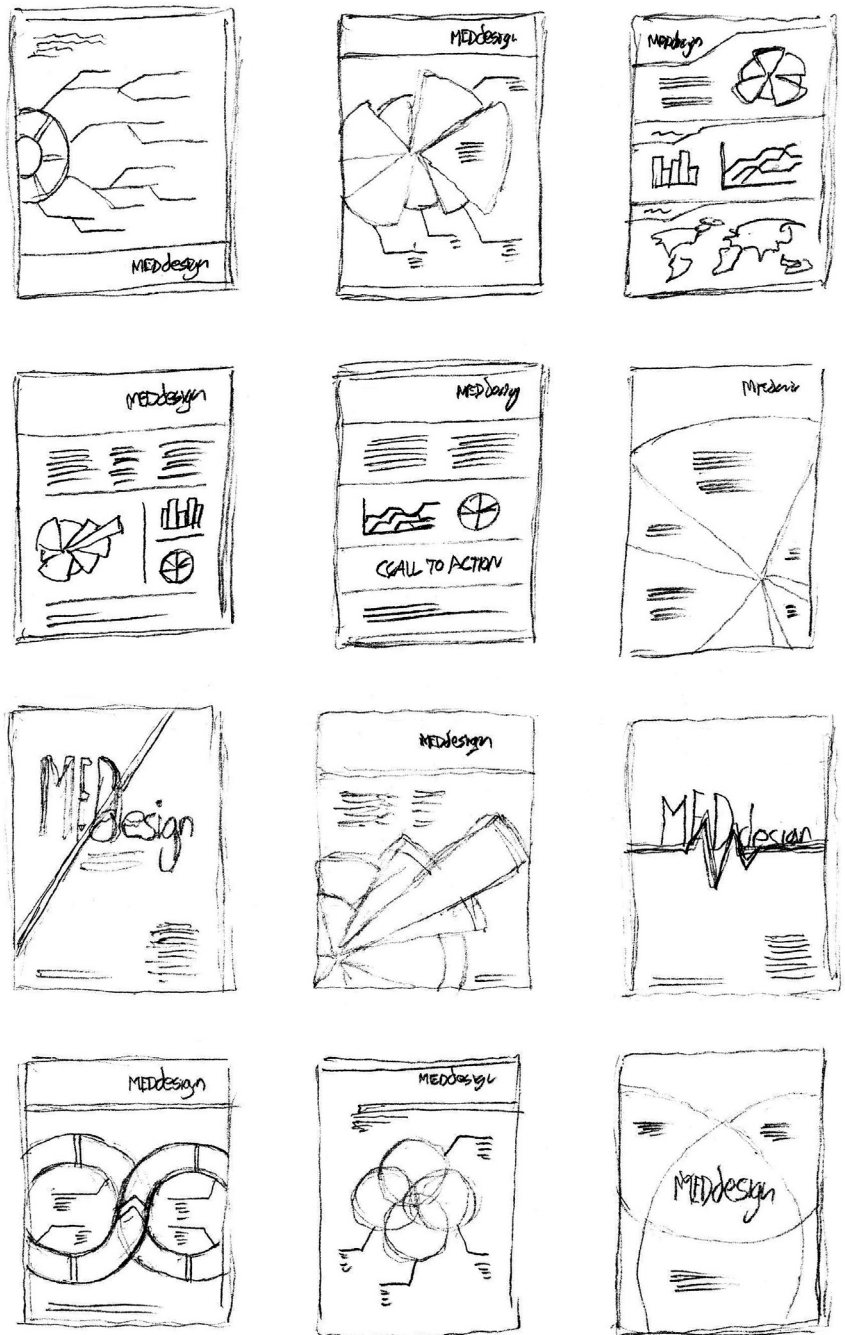
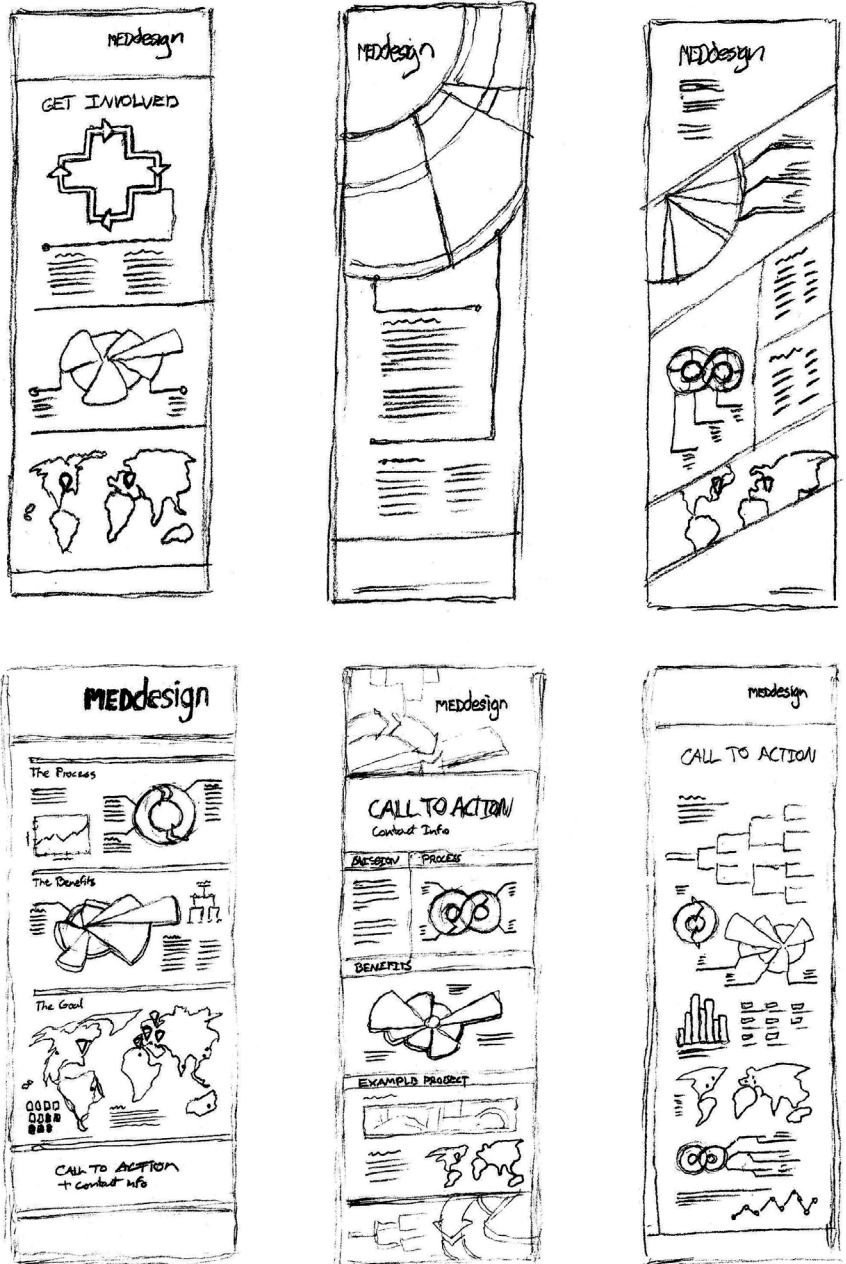


Figure 5: Infographic Sketches





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Development

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## **Development Process**

The process of creating concise content for this project was crucial to effectively communicating the key aspects of the MEDdesign Initiative to the audience. Before digital exploration could begin, the content for the posters, cards and infographics was gathered and refined. The goal was to answer all of the possible questions that the user may have in order to provide an intuitive and satisfying experience. Listing out all of the possible content provided opportunity for refinement and exploration of different layouts and visual representations.

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## Infographic Content Ideation

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About	MEDdesign is an educational initiative in which five international design programs collaborate with healthcare professionals to innovate inclusive design solutions to real-world problems.	
Inclusive Design	Definition: The development of design theories and methods that create design solutions that include the widest range of abilities and demographics without the need for specialized adaptation or variation.	
Schools [map]	Rochester Institute of Technology Helen Hamlyn Centre for Design, RCA University IUAV of Venice Sheffield Hallam University Israel Institute of Technology	
Process [diagram]	Healthcare professionals propose problems. Students provide innovative design solutions.  Medical Problems – Design Solutions Healthcare Professionals – Design Students Healthcare Industry – Universities	
Who Benefits [icons]	Academics Universities Design Programs Design Students Design Professors  Healthcare Professionals Doctors Physicians Surgeons Nurses	Healthcare Industry Hospitals Emergency Care Facilities Retirement Centers Nursing Homes  Patients Disabled (i.e. differently able) Families/Friends Children Elderly

---

Benefits [icons]	Design Students Projects that Make a Difference Real-World Experience Resume Building Job Prospecting International Networking Multi-disciplinary Collaboration Hands-On Learning Showcase Work Promote Health Save or Prolong Lives	Healthcare Industry Multi-disciplinary Design Team Innovative Design Solutions Tools & Equipment Products & Services Procedures & Processes Systems & Software Increased Safety Better Facilities Prospect Employees Cost Effective
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Project Types [chart]	Industrial  Medical Instruments Healthcare Products Surgical Tools Emergency Vehicles Disability Equipment Inclusive Products Safety Equipment	Graphic & Web  Visual Communication Way Finding User Interfaces Interaction Design Medical Information Design Procedural Documents Educational Tools
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Call To Action	Get Involved Slogan
----------------	---------------------

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Contacts [chart]	Helen Hamlyn Centre for Design Royal College of Art Jeremy Myerson  Lab4Living Sheffield Hallam University Paul Chamberlain  Vignelli Center for Design Studies Rochester Institute of Technology R. Roger Remington	University IUAV of Venice Medardo Chiapponi Ph.D.  Technion Israel Institute of Technology Noemi Bitterman
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Website	<a href="http://rit.edu/meddesign">rit.edu/meddesign</a>
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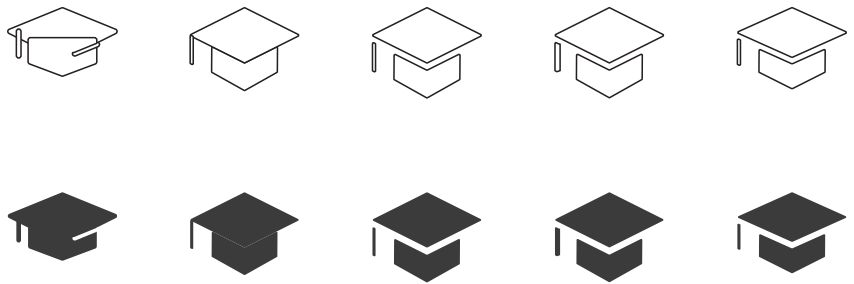
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## Icon Development

To achieve a minimalist style, a shape can be refined until it has balance and symmetry, paying attention to clean negative space. Reusing shapes and mimicking familiar imagery throughout the icon set creates visual unity while trying to be unique and innovative (Fig. 6). Experimenting with various colors, contrast, weight and shape allows you to determine the viability of the icon set (Fig. 7). When icons are designed successfully they are easily recognizable, legible in small sizes, work with the letter forms of the font and feel like a unified set. User testing can verify if the icons are accurately communicating the intended message.

---

Figure 6: Icon Development



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Figure 7: Icon Style Options



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## Icon Considerations

When creating multiple sets of icons the objective was to establish balance in the weight, negative space, size relationship and surface area (Figs. 8–9). The medical and educational components depicted by these icons relate to the facilities, participants and physical solutions that the initiative provides. The challenge was to visually represent a person, place and thing relating to a single component in three different and simplistic ways. Surrounding one set of icons with a circle helps to distinguish one set from the other, while keeping a consistent style that visually compliments each other

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Figure 8: Beneficiary Icons



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Figure 9: Project Icons



## Diagram Development

The primary objective of this awareness campaign is to communicate what the MEDdesign Initiative is and how it functions. These diagrams were intended to answer those questions and serve as the main focus of each component of the campaign (Figs. 10–11). The process diagram clearly communicates how this initiative works and who the key contributors are. The Venn diagram highlights the three major components of this initiative and how they are interrelated in order to communicate the foundations of this program.

Figure 10: Diagram Iterations

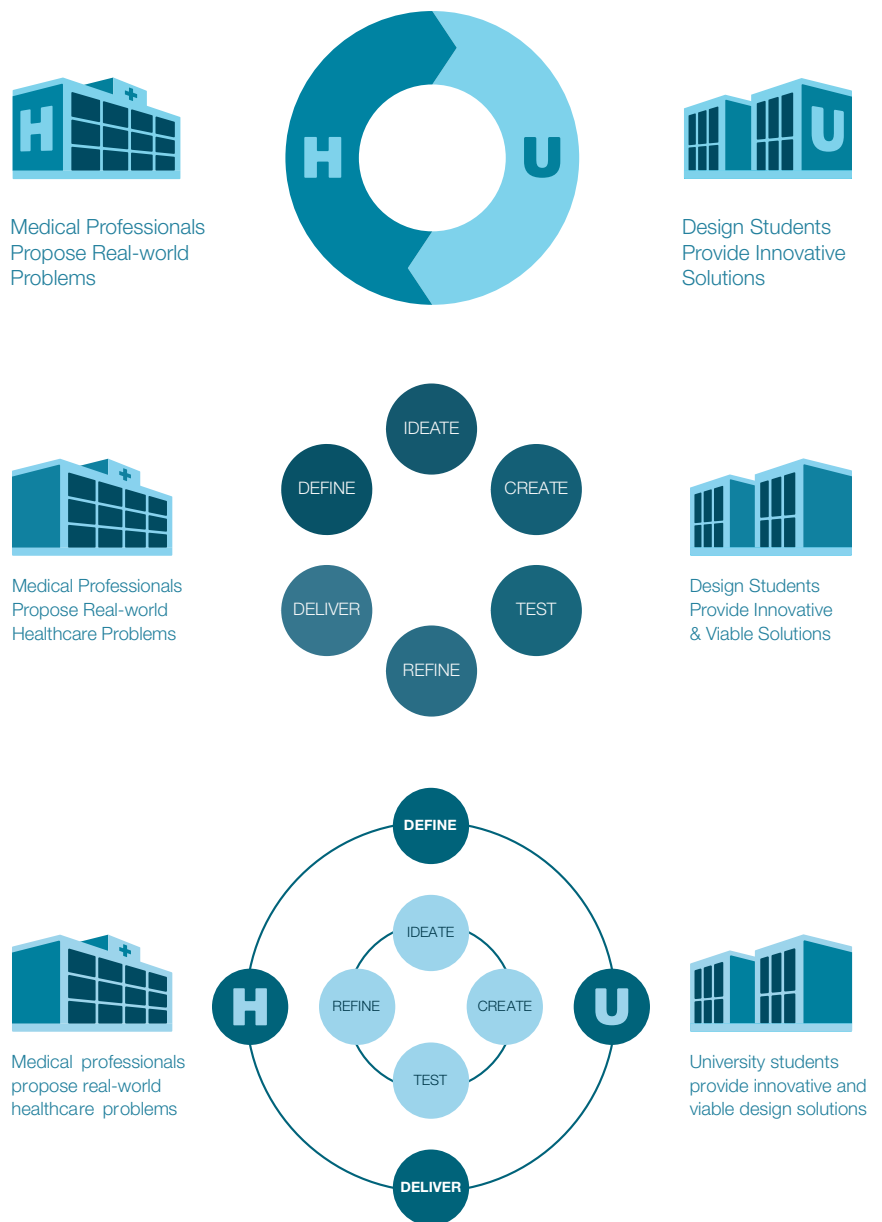
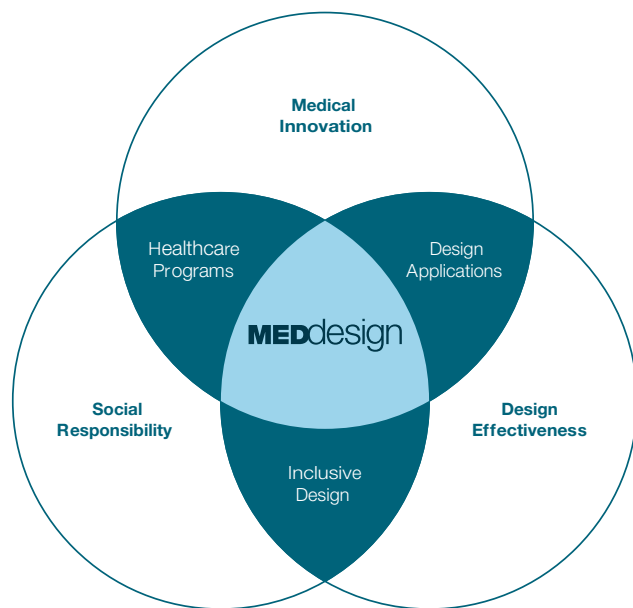
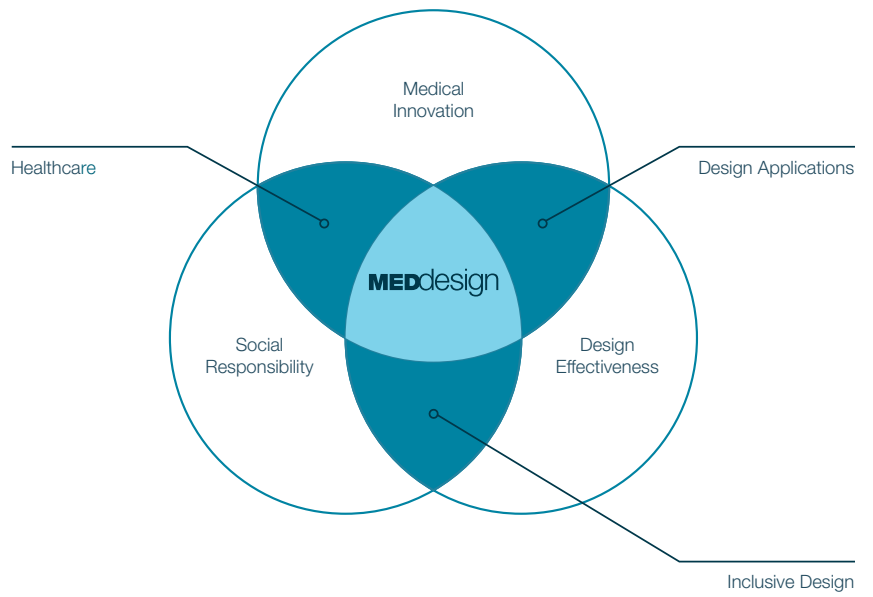


Figure 11: Diagram Iterations





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## Map Development

Using a map to show the locations of the universities involved in the MEDdesign Initiative gives the viewer immediate understanding that this is an international network (Fig. 12). After experimenting with custom map iterations, it was determined that adapting a standardized Mercator map provides the most clarity and immediate spatial recognition.

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Figure 12: Map Iterations



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## Infographic Considerations

The infographic is the main educational tool for the MEDdesign Initiative. This communication tool explains all of the core information about the MEDdesign Initiative in order to provide understanding and foster involvement. The copy, icons, diagrams and maps all come together in the infographic to tell a story.

Laying out all of the possible written content for the infographic in a single font creates a good base to begin establishing the hierarchy of information and header vs. body styling (Fig. 13). Font style, size, color and proximity or spacing are some of the variables that visually group or distinguish information, but it is important to note that only one or two of these visual cues are needed at a time. Typography can be more effective, clean and timeless when you use as few type faces or font styles as possible.

After reviewing early layout options with peers and faculty, the consensus was to use fields of color to chunk or separate the content into intuitive groups. Other variations used space, line rules and typographic treatments to distinguish each section. Using fields of color made it immediately apparent how the content was divided. The next step was to start refining the content by removing redundant information and supplementing some of the sections with icons and graphics in order to visually communicate more effectively. Translating the content into graphic elements can immediately communicate a message while adding visual interest.

The feedback from the Thesis Committee included adjustments to color, layout and content. Different color palettes were explored to better reflect the subject matter and appeal to the audience. The color also indicates if the content is closely related to healthcare, academics or the functions of the initiative. The color palette was refined in order to create better contrast between the typography, icons, graphics and fields of color in the background. The layout iterations involved changing the order of the sections to find an intuitive path through the information that was visually balanced (Fig. 14). The sections were adjusted to create a pattern that repeats certain sizes and formats. The content was revised so that the information was more accurate, concise and digestible. Presenting the right information is just as important as how the information is presented. This iterative feedback was essential to the decision making and adjustments throughout the development process.

The methodology and philosophy in the design research greatly influences the design process. The new perspectives gained by the design research inspired experimentation in the content design, such as naming each section of the infographic with the benefit that the primary audience could receive. For example, the process diagram is titled "Real-World Experience," and the map of the universities involved is titled "International Networking." Design decisions like these were driven by feedback from the primary target audiences and developed with their needs in mind.

Figure 13: Infographic A–B



Figure 14: Infographic C–D



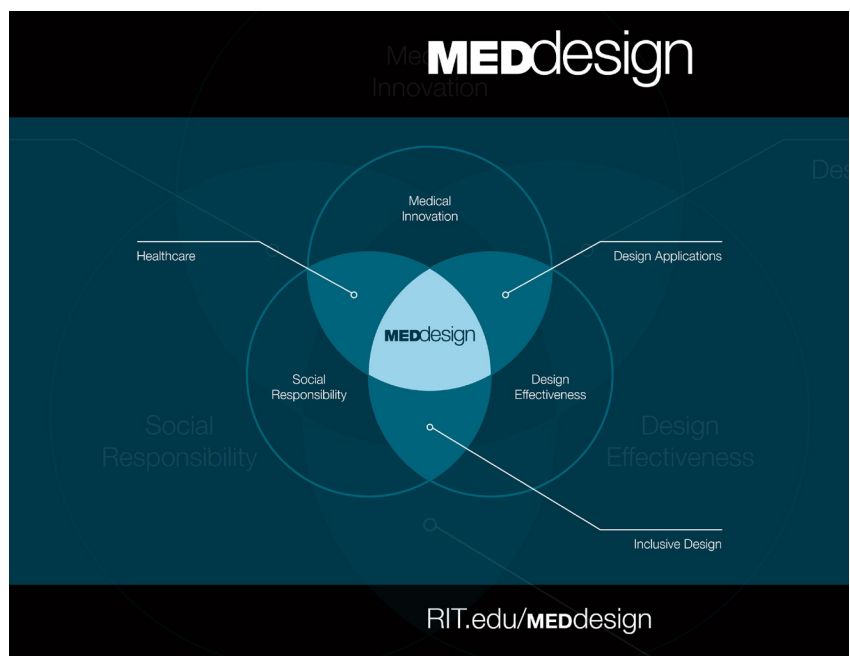
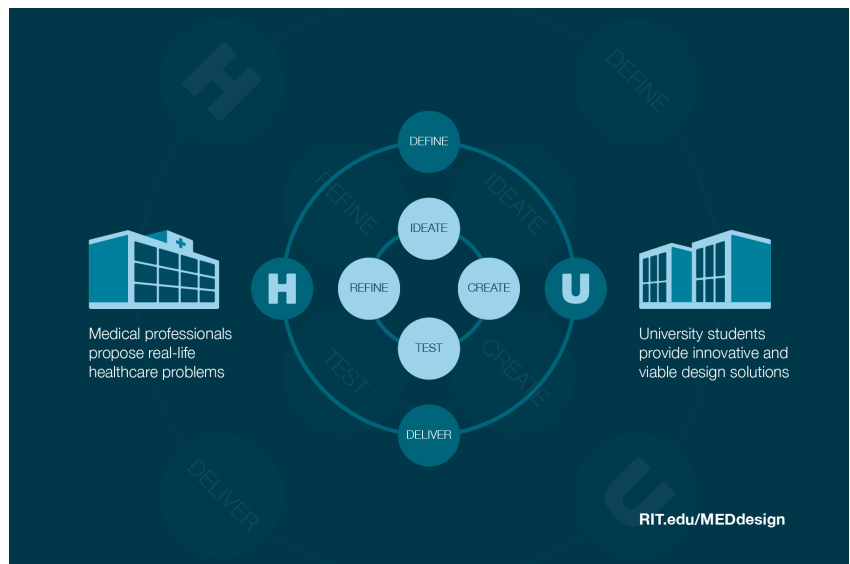
## Poster and Card Considerations

The posters and cards act as secondary educational tools that convey concise messages and focus more on sparking interest and creating visibility for the initiative (Figs. 15–16). Each poster and card explains an aspect, benefit or process of the initiative. The content, layout, color and typography are based off of the final infographic design. This creates a unified and flexible campaign template that can be adapted for other institutions and initiatives.

Figure 15: Poster Iterations



Figure 16: Card Iterations



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Project Deliverables (Figs. 17–26)

Figure 17: Print Infographic  
13.3 x 42.5 in





Figure 18: Print Poster/Card A  
20 x 30 in / 4 x 6 in

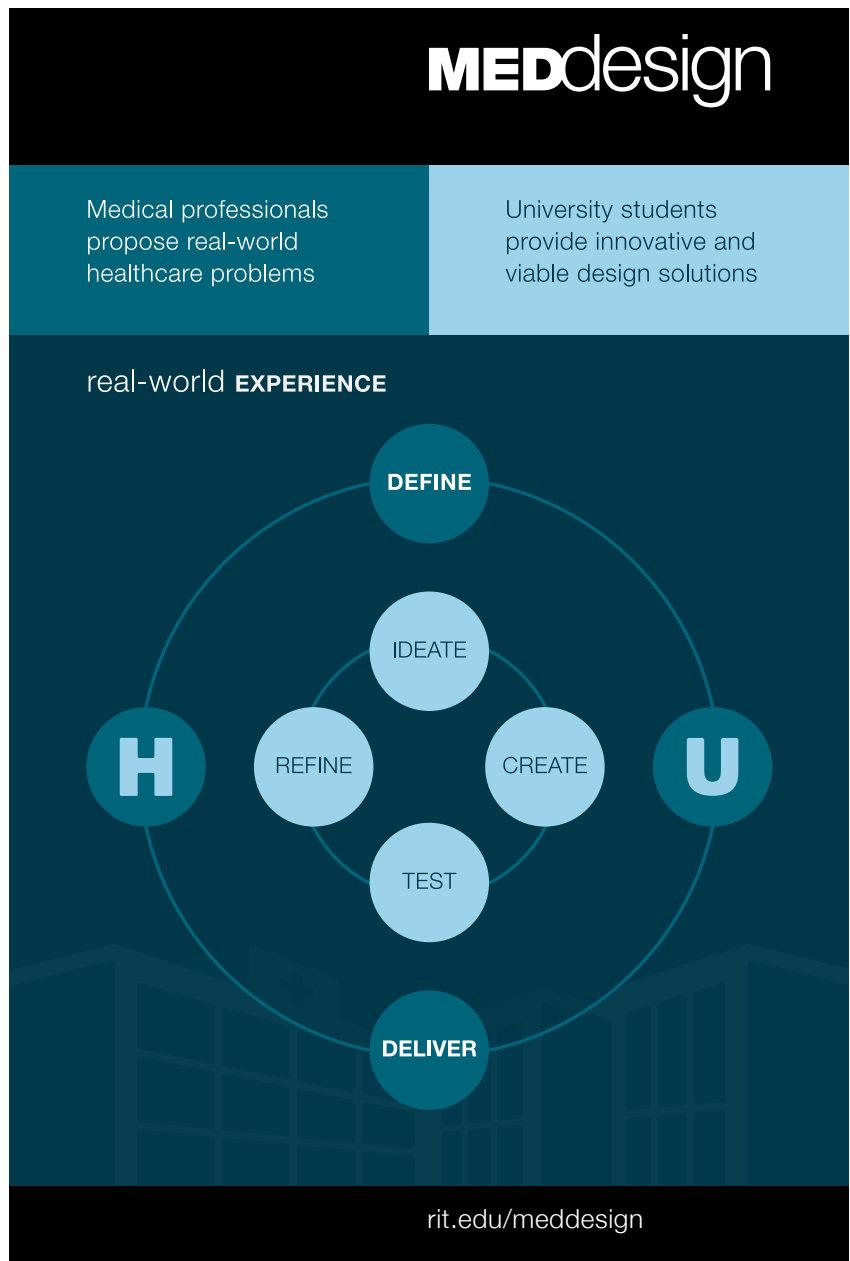


Figure 19: Print Poster/Card B  
20 x 30 in / 4 x 6 in

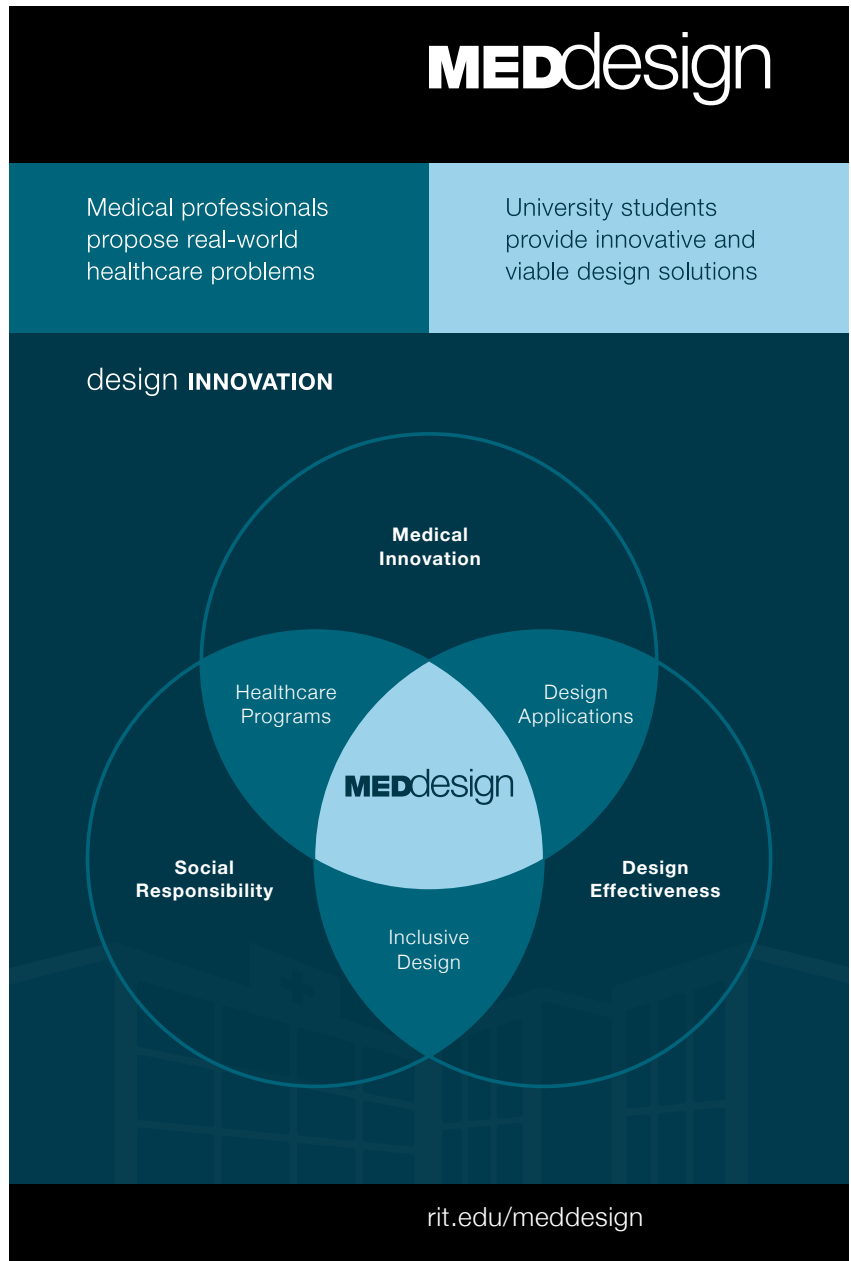


Figure 20: Digital Infographic + Email Blasts

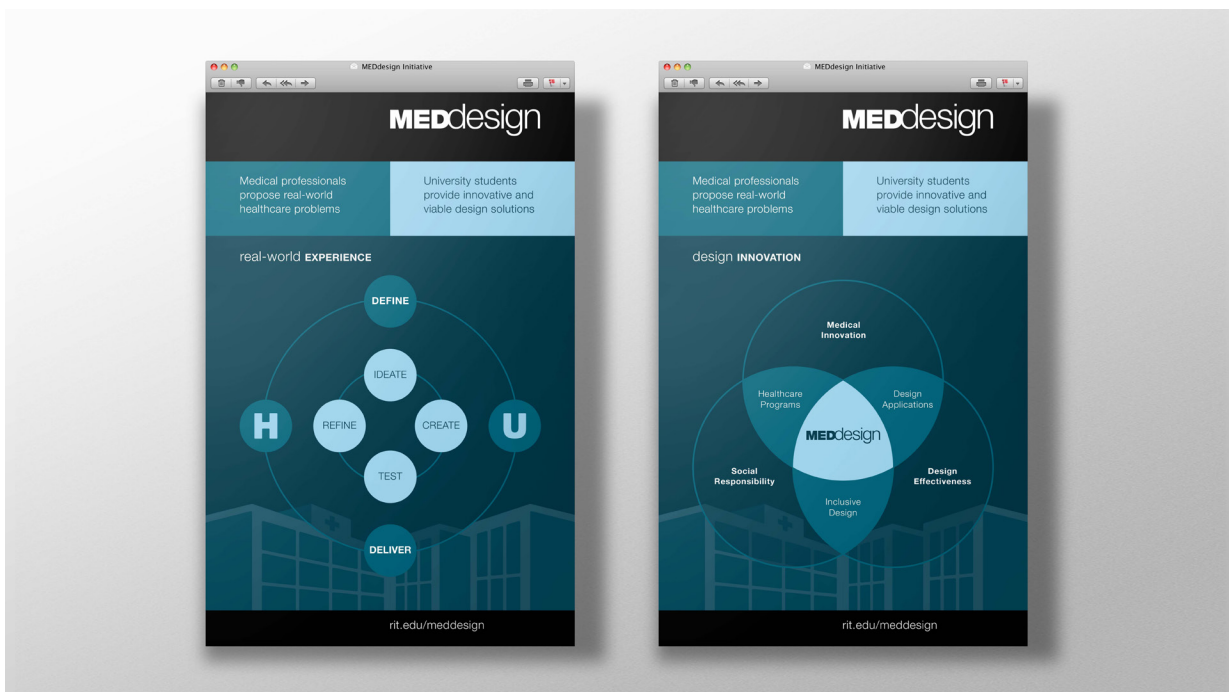


Figure 21: Digital Posters



Figure 22: Web Banner + Online Article





Figure 23: Campaign Photos A–B

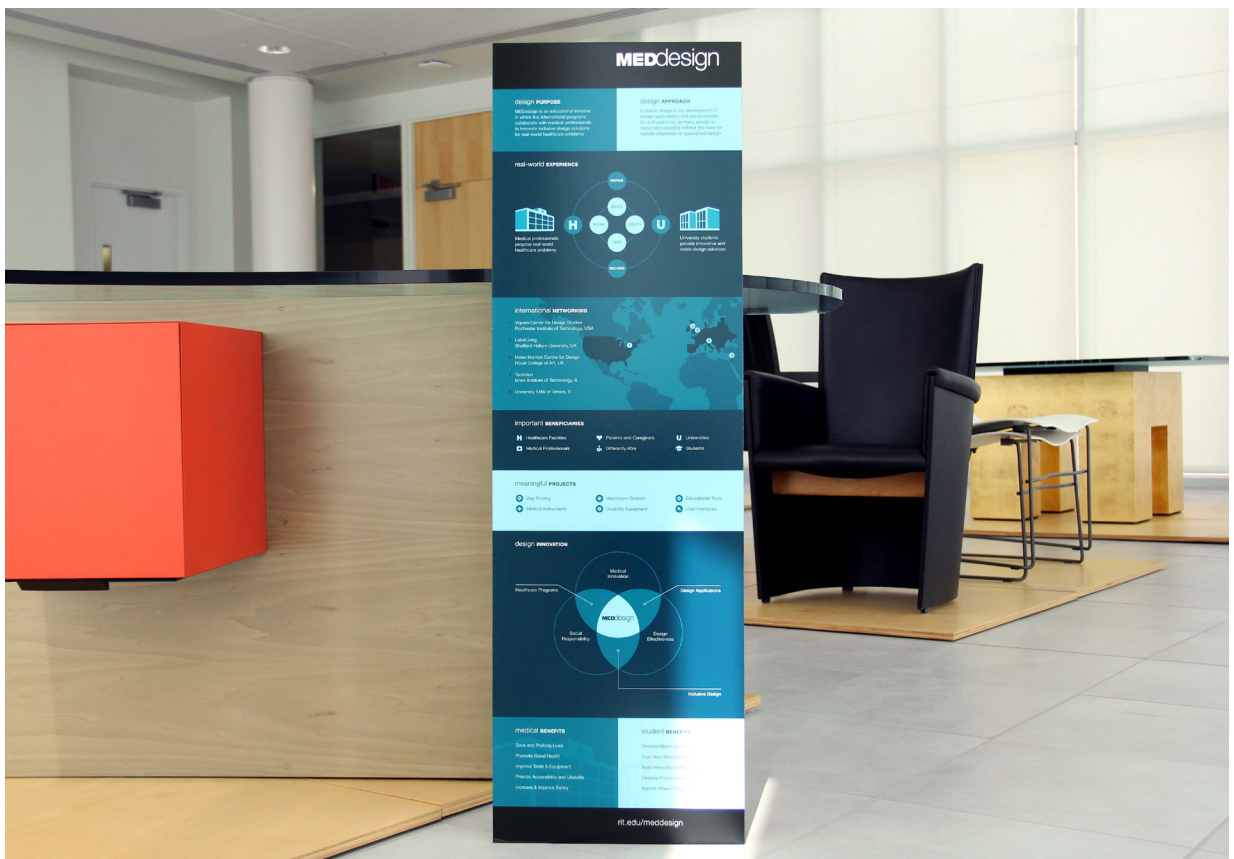




Figure 24: Campaign Photos C–D





Figure 25: Campaign Photos E-F





Figure 26: Campaign Photos G–H



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**Summary**

Evaluation

Dissemination

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## Evaluation

This thesis project was reviewed by academic advisors and peers throughout the research, ideation, proposal and development stages. The thesis committee provided feedback related to the design inquiry, subject matter and technical component. Professors from colleges involved in the MEDdesign Initiative were consulted in the early ideation process. Based on feedback provided by the thesis committee, peer reviews, critiques and progress presentations, various design iterations developed over time. Items of focus included increasing the contrast, improving visual hierarchy and refining content. Since design students are the primary audience for this project, the peer evaluations drove aspects of the design including using fields of color to separate information and distinguish between the medical and academic fields being addressed. Peer reviews were used to determine the current level of student awareness and understanding of the MEDdesign Initiative and how they could get involved.

The deliverables were presented at two exhibitions: Imagine RIT and a formal Thesis Show. Usability surveys were distributed to the audience to provide feedback, with 20 surveys being returned. These exhibits gave the project exposure to all of the major audiences involved. Discussions with medical and design professionals occurred at Imagine RIT. Both the primary and secondary audiences were present at this exhibit, including a doctor from Rochester General Hospital (RGH) and an industrial designer in the surgical field, who each wanted to propose problems/projects for design students to solve. These exhibits made evident that the audience was responding positively to this concept and its execution. Peers from other disciplines showed interest, including an industrial design student who wants to showcase their designs for medical devices, and a medical student who wants to be a part of a collaboration related to design.

The overall impression of the communication tools presented at these exhibitions suggested that this project was an effective, clean and well thought-out design. The survey used in the Thesis Show identified issues with the campaign used to make final adjustments to the design. If some of the information being communicated was not clear or unnecessary, then the design was modified to resolve those issues. The suggested improvements and comments section of the survey helped to determine what adjustments would make this design solution work more effectively for the audience. A formal Thesis Defense was conducted in addition to the exhibitions. This thesis project passed the formal requirements for the program as well as received approval and recognition by peers, faculty and the thesis committee.

---

Testing Considerations	Clarity of Information Ease of Use Information Availability	Overall Impression Problem Areas Technical Performance
------------------------	---	--

---

Survey Results	Testing Category	Percent Effective
	Visual Style	93%
	Clarity of Information	92%
	Usability	88.5%

---

## Dissemination

After implementing the awareness campaign, this project was showcased at IMAGINE RIT, an annual innovation and creativity festival at the Rochester Institute of Technology. It was also a part of a formal Thesis Show for the Visual Communication Design MFA 2015. Feedback from these events were used to make final refinements before conducting a formal Thesis Defense. Upon completion this documentation was published to ProQuest and archived at the Wallace Library. After publication, this project will be submitted to a variety of competitions and publications.

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### Competitions

Communication Arts Advertisement Competition  
Communication Arts Design Competition  
Communication Arts A' International Design Award Competition  
Graphis Poster Annual  
Graphis Design Annual  
Spark Design Awards

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### Publications

Communication Arts	Information Design Journal
Eye Journal	Print Magazine
Graphis	Visible Language

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**Conclusion**

Current Impact

Future Implications

Personal Analysis

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## Current Impact

This design inquiry into how information design can benefit medical design initiatives in education has evolved into an academic/professional model and educational materials that increase awareness, understanding and involvement in the MEDdesign Initiative. It impacts both the medical and academic communities, and redefines how these two fields are interrelated. It bridges the gap between the purely academic and the workplace by creating multidisciplinary design labs that develop viable solutions which meet the needs of healthcare professionals and their patients around the world. These collaborations leverage the collective knowledge and experiences of the international community. This campaign is an application of information design to promote student awareness of the processes and benefits of this new academic/professional model. The project also demonstrates how information design has the power to help communicate technical information about complex medical design initiatives to international audiences that require a thorough understanding of this information.

The initiative to apply design to medical applications shows how design can generate social change, make life better, people healthier, better educated and more capable of being both interdependent and interconnected. The concepts derived from this design research and inquiry into information design have applications beyond the realm of healthcare. This work is an attempt to generate awareness, understanding and respect for design. It is a step towards making an impact in the field and transcending common connotations of design in order to bring the profession into more of a leadership role in society. The hope is to inspire selfless design experimentation and collaboration that is supported by strong personal conviction.

This research led to an increased understanding of design and new perspectives on medicine, education and societal needs. Information design is not just the layout, hierarchy, and legibility, but also involves how the content is written, what the message is and how it is delivered. This is why it is important to gain empathy in the design process and try to better understand how the audience interprets information and how best to present it. In order to be a design professional in a market driven business, a designer must create a relationship with the client that allows them to discover what the real needs are, and understand how to best meet those needs. Professional designers look for ways to improve the design process including the methods for communication, inspiration and education in the workplace. These are just some of the ways that the concept of metadesign can be applied in our pursuit of a rewarding career, that satisfies our financial needs in addition to the needs of society and the world around us.

---

## **Future Implications**

The goal of this project was not to create a specific medical application for design, but rather to promote others to create many innovative medical design applications. The visual language and educational tools derived from this work effectively communicate key information that will continue to increase student awareness, understanding and involvement in the MEDdesign Initiative. Increasing student involvement will improve the initiative's capabilities and attract more healthcare professionals to participate in these collaborations. This initiative will help optimize their impact in the health and wellness industry by attracting design students from diverse disciplines and nationalities. This awareness campaign will foster involvement in medical design applications that improve healthcare and serve as a direct example of how design has the power to improve, prolong and save lives.

The educational materials in this project will serve as a template for communicating information about similar initiatives to students and institutions worldwide. These components could also exist as interactive assets, including short animations or interactive web applications. This wide range of possibilities allows this inquiry to contribute to a number of diverse fields, including design and healthcare in both academic and industry settings. Medical design initiatives provide an opportunity for students to work directly with an international cadre of representatives from many areas of medicine. Healthcare professionals can propose their everyday problems and receive innovative medical design solutions from design students. This process allows students from different disciplines to come together and receive diverse real-world experience early in their academic career. This academic/professional model facilitates design projects that can develop into practical applications.

Universities involved in this initiative will facilitate the international collaborations necessary to develop effective medical design solutions. Medical professionals and patients throughout the world will be able to address critical problems with design solutions developed in an academic setting. International collaboration fostered by these universities will be a source of unique technology, cultural development and natural resources that can aid in the discovery and delivery of medical solutions. Each project developed through this university based initiative will exemplify how effective information design benefits medical design applications.



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## Personal Analysis

This project challenged me by taking me out of my comfort zone and helping me to further develop the new skills that I was learning at the Rochester Institute of Technology (RIT). My academic career began with illustration and finearts. I then earned a BFA in Graphic Design from the University of Wisconsin. Currently, I am finishing my MFA in Visual Communication Design while working as a User Interface Designer in Redlands, CA. My experiences at RIT included everything from fine art to modernist typography. I developed a range of skill sets and values, which I applied to this project. This experience, paired with my professional development, led the pathway for obtaining my current position at Esri.

This work demonstrates how to effectively convey information in an appealing way without using any fine art or photography; instead allowing the information graphics and typography to attract attention and deliver the message. The proposal was written with the expectation that infographics would be used to show modern data visualization with charts, graphs and statistics. However, when I started to gather the content I realized that there was no data to visualize. I then had the challenge of developing infographics that represented concepts, process, benefits and projects in a way that was appealing to a young audience. I had to clearly convey key information including what the initiative does, how it works and who it benefits.

As a student of design, I have strong interests in the field, but after carrying out this research, I now have a new found respect and passion for design. A thorough analysis has made design far more personal to me and a part of my way of life in every aspect. This deeper understanding of design makes me realize that it is not just for the elite or the experts; it is for everyone and everything. It is not just a concept, approach or tool, it is a natural and ever present necessity for society and its future. Design is an integral part of humanity as much as art, music or language.

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**Appendix**

Surveys

Copy of Proposal

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## Surveys

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**MEDdesign Survey**

---

Visual Style	effective	(1)	2	3	4	5	ineffective
Clarity of Information	effective	(1)	2	3	4	5	ineffective
Usability	effective	1	(2)	3	4	5	ineffective

---

Suggested Improvements:

Comments: Great work, really like how information is clearly outlined.

---

**MEDdesign Survey**

---

Visual Style	effective	1	(2)	3	4	5	ineffective
Clarity of Information	effective	1	(2)	3	4	5	ineffective
Usability	effective	1	2 X	3	4	5	ineffective

---

Suggested Improvements:

IMPROVED NAVIGATION

---

Comments:

Ambitious, timely and relevant project to the medical industry

---

**MEDdesign Survey**

---

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

---

Suggested Improvements:

---

Comments: *good use of color between sections*

---

**MEDdesign Survey**

---

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

---

Suggested Improvements:

---

Comments: *Great job. Maybe more colors would work better (not many, but choose 1 highlight color)*

**MEDdesign Survey**

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

Suggested Improvements: Brightness of Background "too white"

Comments:

**MEDdesign Survey**

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

Suggested Improvements: Rely less on bold headers for organization of material, color scheme of main page kind of clashes + all the sections are the

Comments: same size, try making the initial page look less cluttered

---

**MEDdesign Survey**

---

Visual Style	effective	①	2	3	4	5	ineffective
Clarity of Information	effective	①	2	3	4	5	ineffective
Usability	effective	①	2	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

beautiful presentation, all questions answered!

---

**MEDdesign Survey**

---

Visual Style	effective	①	2	3	4	5	ineffective
Clarity of Information	effective	1	②	3	4	5	ineffective
Usability	effective	1	②	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

---

**MEDdesign Survey**

---

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

---

Suggested Improvements:

*more color contrast  
avoid green*

---

Comments:

*very informative*

---

---

**MEDdesign Survey**

---

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

---



---

**MEDdesign Survey**

Visual Style	effective	(1)	2	3	4	5	ineffective
Clarity of Information	effective	(1)	2	3	4	5	ineffective
Usability	effective	(1)	2	3	4	5	ineffective

Suggested Improvements:

Temple design - very effective

Comments:

to get through lots of info.

---

**MEDdesign Survey**

Visual Style	effective	(1)	2	3	4	5	ineffective
Clarity of Information	effective	(1)	2	3	4	5	ineffective
Usability	effective	1	(2)	3	4	5	ineffective

Suggested Improvements:

adding short video

Comments:

fantastic work

---

**MEDdesign Survey**

---

Visual Style	effective	1	<i>2</i>	3	4	5	ineffective
Clarity of Information	effective	1	<i>2</i>	3	4	5	ineffective
Usability	effective	1	<i>2</i>	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

*Confident presentation - good cause marketing*

---

---

**MEDdesign Survey**

---

Visual Style	effective	<i>2</i>	2	3	4	5	ineffective
Clarity of Information	effective	<i>2</i>	2	3	4	5	ineffective
Usability	effective	1	<i>2</i>	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

---

**MEDdesign Survey**

---

Visual Style	effective	①	2	3	4	5	ineffective
Clarity of Information	effective	①	2	3	4	5	ineffective
Usability	effective	1	②	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

---

**MEDdesign Survey**

---

Visual Style	effective	①	2	3	4	5	ineffective
Clarity of Information	effective	①	2	3	4	5	ineffective
Usability	effective	①	2	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

---

**MEDdesign Survey**

---

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

---

**MEDdesign Survey**

---

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

---

**MEDdesign Survey**

---

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

---

**MEDdesign Survey**

---

Visual Style	effective	1	2	3	4	5	ineffective
Clarity of Information	effective	1	2	3	4	5	ineffective
Usability	effective	1	2	3	4	5	ineffective

---

Suggested Improvements:

---

Comments:

---

Copy of Proposal

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**Information Design for Medical Innovation**

Raising Student Awareness of Medical Design Potential

Brian W Rosenberg

---

**Thesis Proposal for the Master of Fine Arts Degree**

Visual Communication Design MFA Program

School of Design

College of Imaging Arts and Sciences

Rochester Institute of Technology

14 November 2014

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Thesis Title

**Information Design for Medical Innovation**

Raising Student Awareness of Medical Design Potential

---

Committee Approval

Chris Jackson

Chief Thesis Advisor, Visual Communication Design

*Technical Component Resource*

---

Signature of Chief Advisor

Date

R. Roger Remington

Associate Thesis Advisor, Medical Design

*Subject Matter Resource*

---

Signature of Associate Advisor

Date

Bruce Meader

Associate Thesis Advisor, Information Design

*Design Inquiry Resource*

---

Signature of Associate Advisor

Date

Brian W Rosenberg

Master of Fine Arts Degree Candidate

---

Signature of MFA Candidate

Date



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**Abstract**

Medical design has the power to improve, prolong and save lives. Medical professionals and patients throughout the world face critical problems that can be addressed with design solutions developed in an academic setting. International collaboration fostered by universities can be a source of unique technology, cultural development and natural resources that can aid in the discovery and delivery of medical solutions. Projects developed through university based initiatives exemplify how effective information design benefits medical design applications.

MEDdesign is a program initiative of the Vignelli Center for Design Studies at the Rochester Institute of Technology. Through this international program, design students solve medical problems proposed by a diverse range of healthcare professionals. These collaborations result in medical applications that improve healthcare and prolong life. Student awareness of the processes and benefits of this academic/professional model are needed in order to establish more collaborations and innovations in medical design.

The main objective of this thesis is to foster more involvement among newcomers to medical information design in the realm of academics. The attributes of effective information design can be applied in order to communicate important information about medical design initiatives. Proof of this concept will be shown by developing a visual language and educational tools that increase student awareness, understanding and involvement in this initiative. These educational materials will be comprised of both print and digital media including infographics, posters, leave-behinds, email blasts, web banners and articles featured on the MEDdesign website. The visual language and educational materials will serve as a template for communicating information about similar initiatives to students and institutions throughout the world.

---

**Key Terms**

Academic Initiatives  
Awareness Campaign  
Design Students  
Educational Infographics  
Healthcare Professionals

Information Design  
Innovative Solutions  
International Collaboration  
Medical Design  
Student Awareness

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## Thesis Statement

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Design Inquiry	How can the attributes of information design benefit medical design initiatives?	
Personal Stance	Effective information design can increase student awareness, understanding and involvement in medical design initiatives.	
Proof of Concept	Information design will be used to develop educational tools that communicate the processes and benefits of the MEDdesign Initiative to design students at the Rochester Institute of Technology. These educational materials will be comprised of both print and digital media including infographics, posters, leave-behinds, email blasts, web banners and articles featured on the MEDdesign website. The visual language and educational materials will serve as a template for communicating information about similar initiatives to students and institutions throughout the world. These components could also exist as interactive assets, including short animations or interactive web applications. This wide range of possibilities allows this inquiry to contribute to a number of diverse fields, including design and healthcare in both academic and professional settings.	
Goals	Appeal to an audience Contribute to the field of design Defend a stance Develop a proof of concept Exemplify the power of design	Explore a design inquiry Inspire collaboration Propose a hypothesis Stimulate discovery Solve a design problem
Objectives	Communicate information Develop a visual language Increase awareness Appeal to design students Produce educational tools	Promote involvement Provide rationale Research design topics Showcase projects Visualize processes

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## Situation Analysis

Advances have been made continually that improve medical tools and practices. Moreover, there are government programs in place that support innovation in medical design, and a variety of public, private and non-profit organizations support design for medical applications. However, until recently, designers have been almost absent from the medical field, and very few academic programs educate designers in healthcare practices.<sup>1</sup> Now there are several excellent academic initiatives that are working to improve lives through medical design.

Medical design initiatives provide an opportunity for students to work directly with an international cadre of representatives from many areas of medicine. Healthcare professionals can propose their everyday problems and receive innovative medical design solutions from design students. This process allows students from different disciplines to come together and receive diverse real-world experience early in their academic career. This academic/professional model facilitates academic projects that can develop into practical applications.

Currently the majority of information on academic medical design exists as collections of demonstrative projects. These projects typically are showcased in web formats or in published works, but rarely exist in a manner that communicates how these programs actually function. A visual diagram of this academic/professional model would help explain the processes and benefits to students. Increasing student awareness and involvement in these organizations would improve their capabilities and attract more healthcare professionals to participate in these collaborations.

---

### Academic Programs

**Harvard Medical School**  
Health Sciences and Technology  
**Howard Hughes Medical Institute**  
Med into Grad (MID)  
**Massachusetts Institute of Technology**  
Center for Integration of Medicine and Innovative Technology (CIMIT)  
**Rochester Institute of Technology**  
MEDdesign Initiative  
**University of Cincinnati**  
Center for Medical Device Innovation & Entrepreneurship Program

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### Major Organizations

Advanced Medical Technology Association (AdvaMed)  
Bill & Melinda Gates Foundation  
World Health Organization (WHO)  
INDEX: Design To Improve Life  
Live Well Collaborative  
National Institute of Health (NIH)  
The Food and Drug Administration (FDA)

<sup>1</sup> Peter H. Jones, *Design for Care: Innovating Healthcare Experience* (Brooklyn: Rosenfeld Media, 2013), 16.

---

**Target Audience**

The situation analysis revealed the need for an increase in student awareness and participation in medical design initiatives. The audience for an awareness campaign for the MEDdesign Initiative is mainly comprised of graphic and industrial design students at the Rochester Institute of Technology, but many other disciplines are relevant and their involvement would expand the range of projects developed through the MEDdesign Initiative. Appealing to undergraduate students that are still early in their education would give them immediate hands-on experience. Being involved earlier in their academic career generates a greater impact on their current training and future ability to contribute to medical applications through design.

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Primary Audience	Undergraduate graphic and industrial design students in the College of Imaging Arts and Sciences at the Rochester Institute of Technology.
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Secondary Audience	<p>Students and faculty from many disciplines at the Rochester Institute of Technology, including medical illustration, engineering, packaging design, computer sciences, information technology, web design and user experience/interaction design students.</p> <p>Medical, health and design departments, faculty and students in universities throughout the world.</p> <p>Practicing healthcare professionals, government programs, hospitals, emergency care facilities, elderly care facilities and research labs with medical design needs.</p> <p>Public, private and non-profit organizations for health and wellness.</p> <p>The medical, health and biotechnology Industries.</p> <p>Medical patients, people with disabilities and the friends and families who provide support.</p>
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Rochester Medical Facilities	Rochester General Hospital Strong Memorial Hospital Highland Hospital	Monroe Community Hospital Unity Hospital Eastside Medical Urgent Care
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## Methodological Design

The objective of this design research and application is to pose a design inquiry, form an opinion and apply it to an area of interest. The design inquiry component is an exploration of information design and its ability to communicate in an effort to foster involvement. The area of interest involves the processes and benefits of a complex academic/professional model that benefits medical, social and academic aspects of design.

---

### Design Process

When approaching a design challenge, the process changes depending on the kind, scope and scale of each project, but the main ideology remains the same. Designers should not jump right into the ideation phase without further analyzing and defining the project topic. Before ideation, a series of questions must be posed to ensure that the project is going to make the right impact and effectively solve the problem at hand.

In regards to the MEDdesign Initiative, the question is how to increase involvement? More specifically, how can information design be used to communicate important information about the initiative to design students? The design research shows that information design is a natural component of any creative solution. In researching the subject matter I will provide a rationale that explains how information design can solve the needs of an academic initiative.

Once there is a clearly defined problem, an understanding of the context, and a specific audience, the ideation phase can begin. When ideating, the best principle is accuracy by volume. This is formally known as rapid prototyping. Proposing radical design solutions may seem counter-productive, but they help in discovering innovative solutions that are practical. There are an infinite number of solutions to any given problem, but the right solution cannot be found without exploring both ends of the spectrum. After choosing the best set of solutions, computer-based refinement can be conducted. In general, each aspect of this process is equally important and inherent in design that can aid in the discovery of innovative design solutions.

---

### Design Theories

Cradle to Cradle  
Design by Objectives  
Design for Care  
Design for the Real World  
Design Thinking  
Effective Design  
Evaluation Methods  
Gestalt Perception

Inclusive Design  
LATCH Theory  
Multiple Intelligences  
Typographic Problem-Solving  
Sensemaking  
SIGN Theory  
Systemic Design  
System Thinking

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### Creative Software

Photoshop

InDesign

Illustrator

**Current Assets**

Brandmark Sketches



Digital Brandmark Ideation

<b>MEDesign</b>	MEDesign	<b>MEDdesign</b>	MEDdesign
<b>MEDesign</b>	<b>MEDesign</b>	<b>MEDdesign</b>	<b>MEDdesign</b>
<b>MEDesign</b>	MEDesign	<b>MEDdesign</b>	MEDdesign
<b>MEDesign</b>	MEDesign	<b>MEDdesign</b>	MEDdesign
<b>MEDesign</b>	MEDesign	<b>MEDdesign</b>	MEDdesign

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Current Brandmark

**MED**design

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Previous Brandmark

**ME**Design

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Typography

**Helvetica Neue (T1) 75 Bold**  
**abcdefghijklmnopqrstuvwxy**  
**ABCDEFGHIJKLMNPOQRSTUVWXYZ**  
**1234567890**

Helvetica Neue (T1) 45 Light  
abcdefghijklmnopqrstuvwxy  
ABCDEFGHIJKLMNPOQRSTUVWXYZ  
1234567890

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Color Pallet



RGB 0 75 97  
#004b61

RGB 1 139 176  
#008bb0

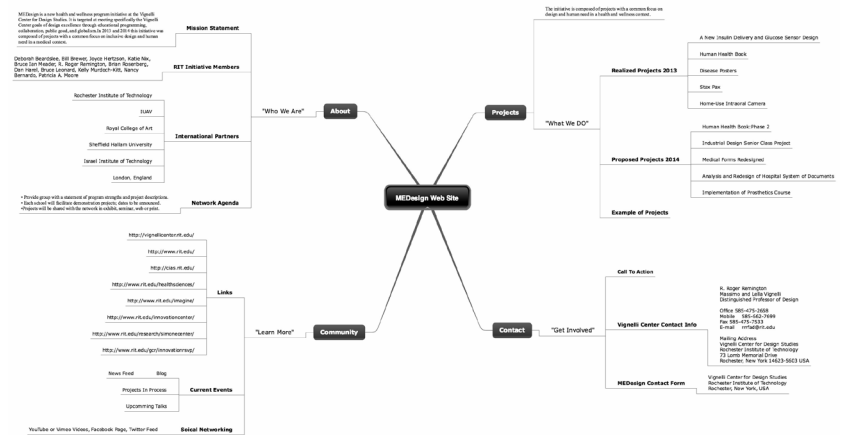
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#f2f2f2

RGB 219 219 228  
#dbdbe4

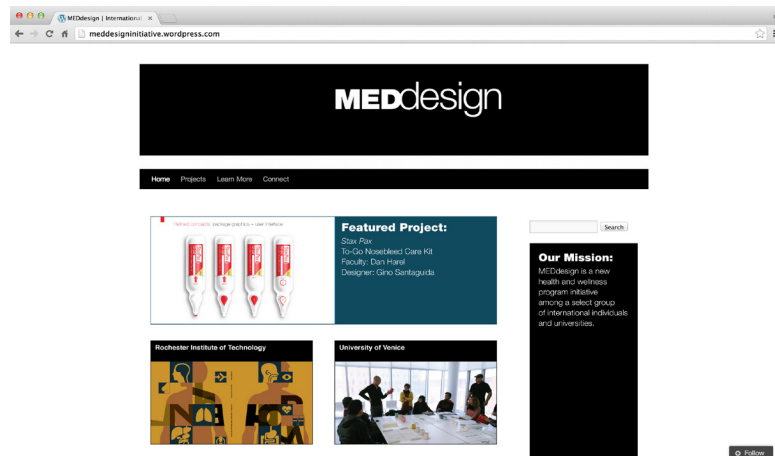
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#221f20

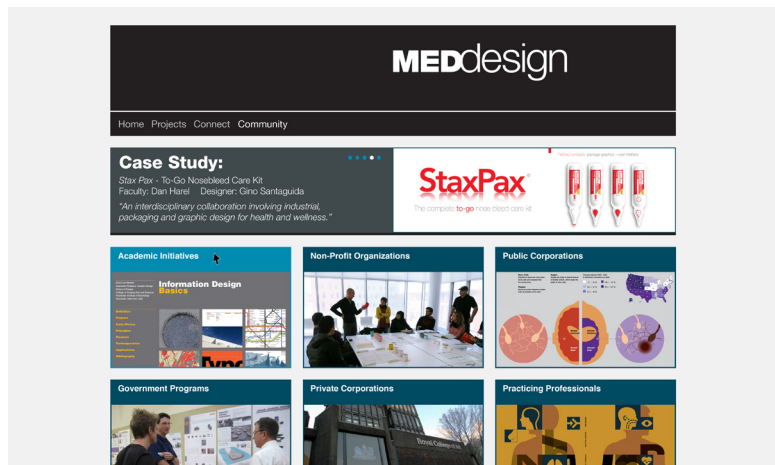
## Website Mind-map



## Website Working Prototype

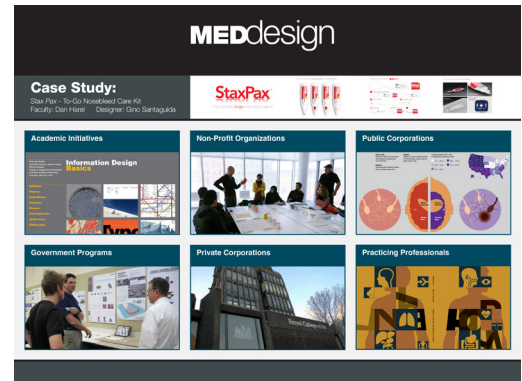
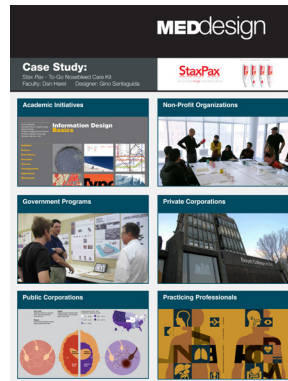


## Refined Mock-Up



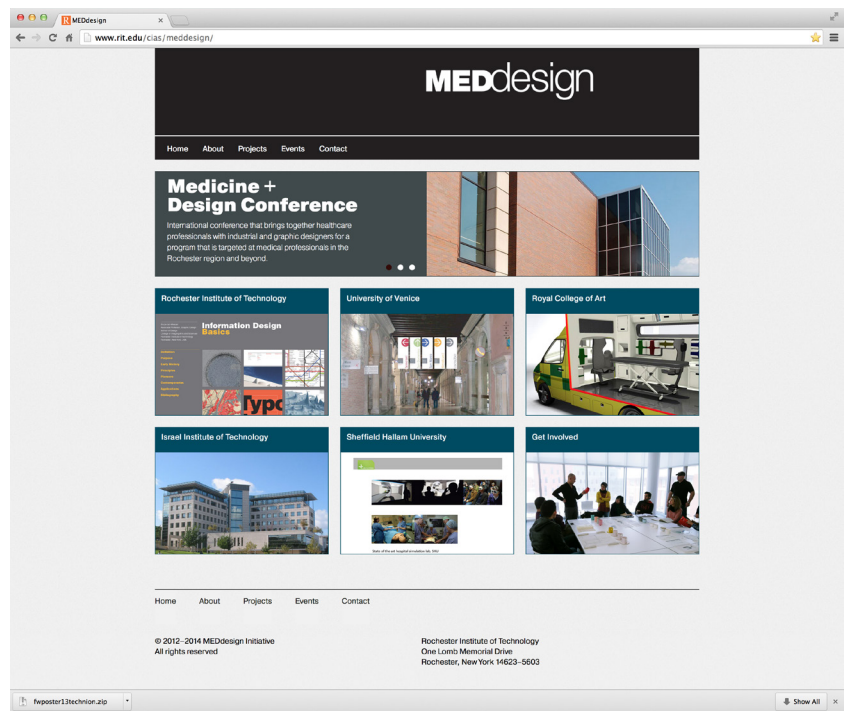


## Mobile App Mock-Up



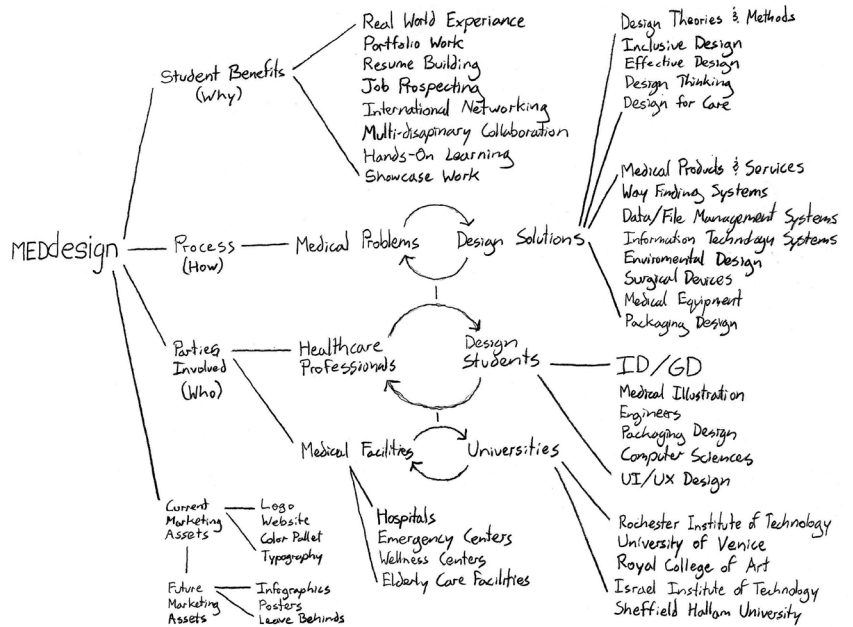
## Current Website

www.rit.edu/meddesign



# Future Asset Ideation

## Mind-map



## Icon Sketches

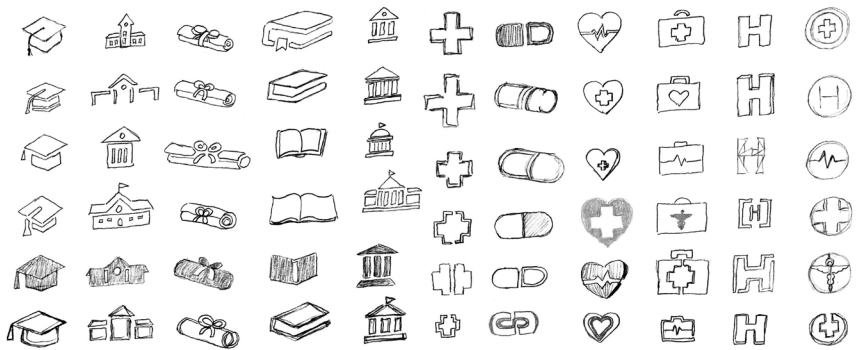
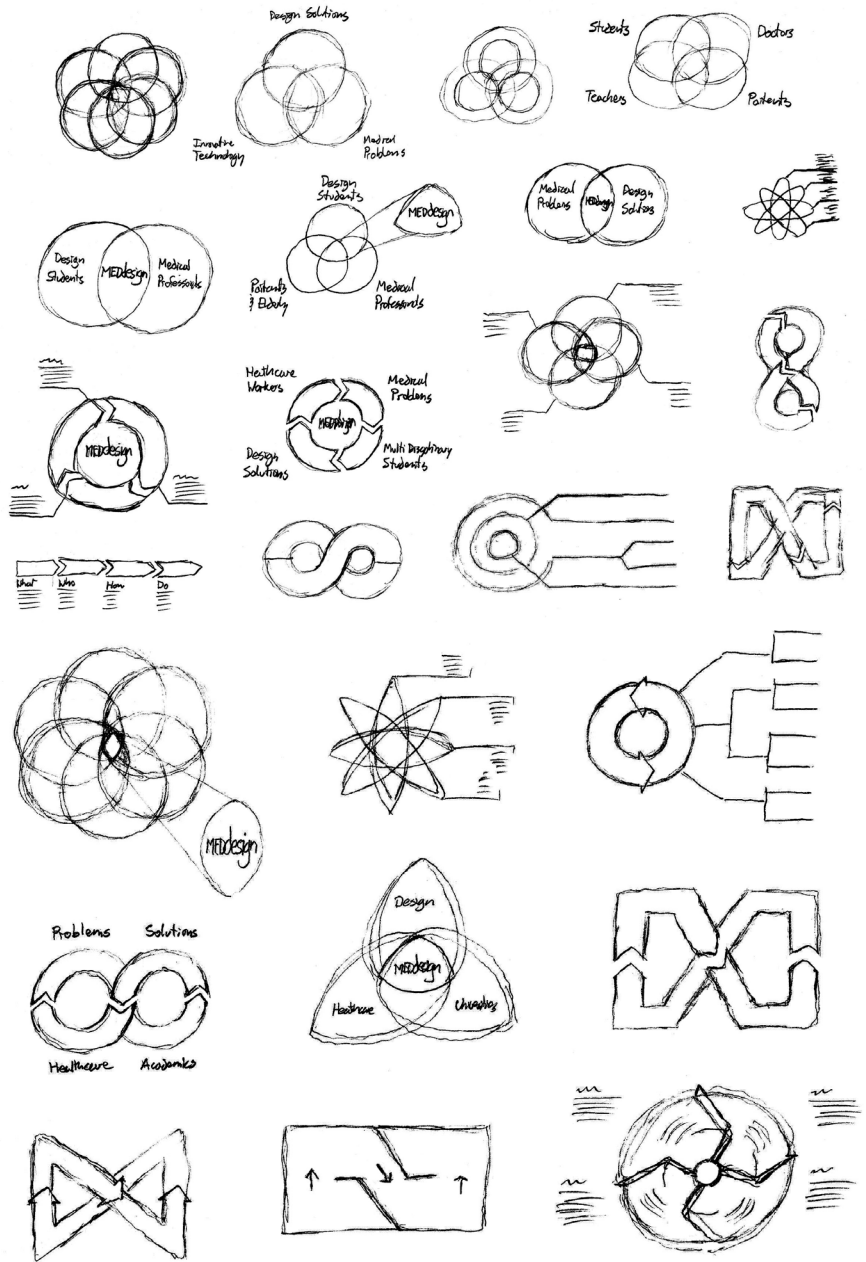
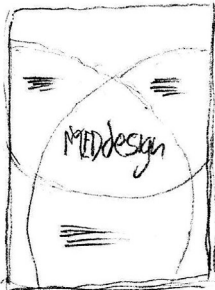
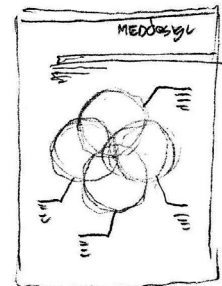
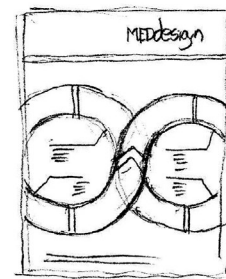
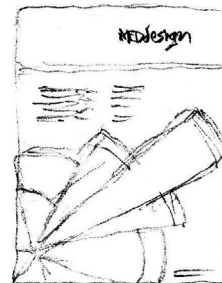
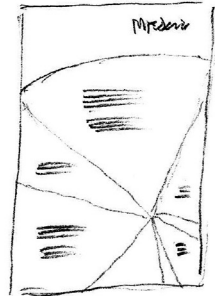
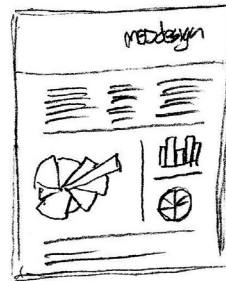
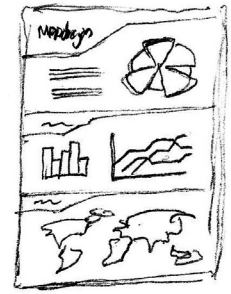
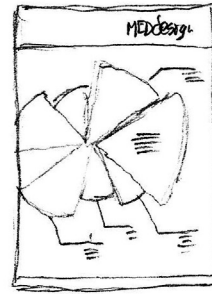
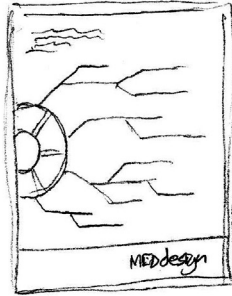


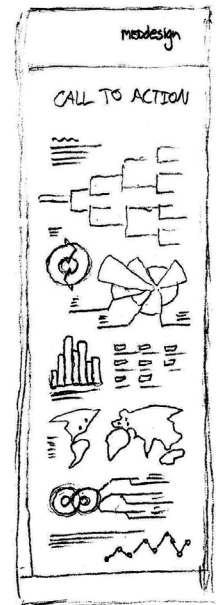
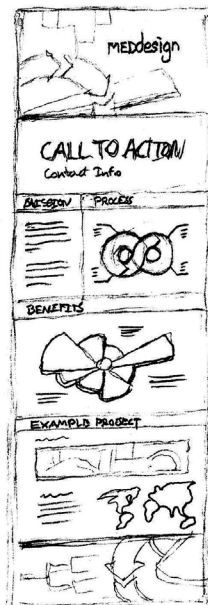
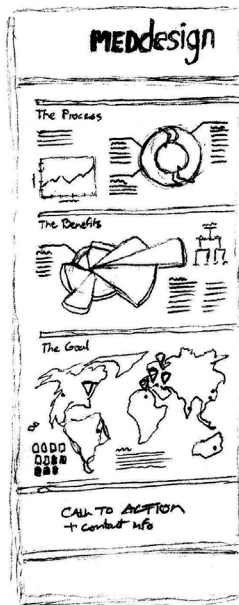
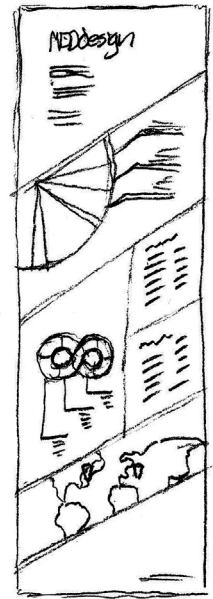
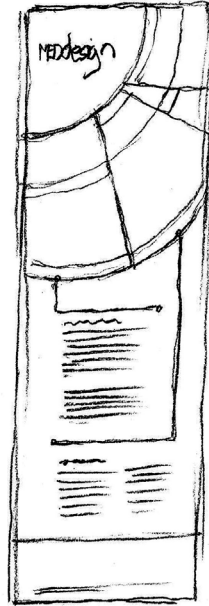
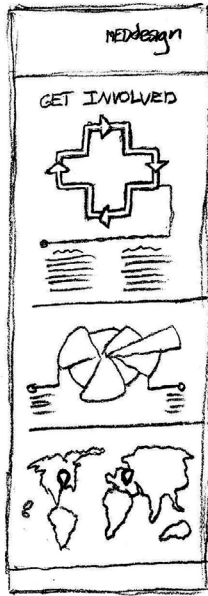
Diagram Sketches



Poster Layout Sketches



Infographic Sketches



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## Implementation Strategies

The deliverables for this thesis involve a visual language and educational tools that will increase awareness, understanding and involvement in a medical design initiative. These educational materials will be comprised of both print and digital media including infographics, posters, leave-behinds, email blasts, web banners and articles featured on the MEDdesign website. The number of infographics will be determined by the components of this academic-professional model. The overarching model will serve as the main infographic, while more specific topics will require their own graphics to be used in supporting materials for the campaign. As a result, this newly developed visual language and educational materials will act as a template that other initiatives could use to raise awareness for their own needs.

The printed components will be distributed at the Rochester Institute of Technology. Posters will be hung up in high traffic areas on campus for students in the related fields of study. The leave-behinds will be distributed at specific events, classrooms and study areas used by these students. Part of the evaluation of the success of this project involves surveying students to see if the campaign reached and intrigued them. Digital counterparts to the printed materials will be distributed online and live on the MEDdesign website. An interactive campaign, including short animations or interactive web applications could be developed from the assets created in this project.

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### Deliverables

#### Print

Infographic  
Poster  
Leave-behind

#### Digital

Email Blast  
Web Banner  
Featured Article

#### Visual Language

A template that other initiatives can use for education and awareness.

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### Components

Call To Action  
Charts  
Color Pallet  
Copy  
Figures

Graphs  
Grid System  
Hierarchy  
Icons  
ISOTYPE

Layout  
Map  
Tables  
Timeline  
Typography



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## Pragmatic Considerations

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Expenses	Research books:	\$100–200
	Design Topic Subject Matter Technical Aspect	
	Print Production:	\$100–200
	Posters Leave-behinds Documentation	
	Competition fees:	\$100–200

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Timeline	Month	Component
	NOV	Continued Research: Information Design MEDdesign Initiative Illustrator Tools
	DEC	Survey 1: Development Implementation
	JAN	Print Components: Illustrated Ideation Digital Exploration 1st Committee Meeting Revisions Content Finalized
	FEB	Digital Components: Illustrated Ideation Digital Exploration 2nd Committee Meeting Implementation
	MAR	Survey 2: Development Implementation Revisions Content Finalized
	APR	Documentation & Presentation 3rd Committee Meeting
	MAY	Thesis Defense Complete Final Project Documentation 4th Committee Meeting Thesis Report Online Last Committee Meeting Thesis Show Graduation

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## Evaluation Plan

Prior to developing the project deliverables, a survey will be used to determine the current level of student awareness and understanding of the MEDdesign Initiative and how they can get involved. The results will help determine what adjustments would make certain aspects of the design solution work more effectively for the audience.

The project will be reviewed by advisors during the design process. The thesis committee will provide feedback related to the design inquiry, subject matter and technical component. Professors from colleges involved in the MEDdesign Initiative will also be consulted.

After the awareness campaign is developed and implemented, a second survey will be conducted to see if the campaign reached the primary audience, raised awareness and fostered involvement. This survey will also isolate problems with the campaign in order to make final adjustments to the design. If some of the information being communicated is not clear or unnecessary then the design can be modified to resolve those issues.

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### Testing Considerations

Clarity of Information  
Ease of Use  
Information Availability

Overall Impression  
Problem Areas  
Technical Performance

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## Dissemination

After implementing the awareness campaign this project will be showcased at IMAGINE RIT, an annual innovation and creativity festival at the Rochester Institute of Technology. Feedback from this event will be used to make final refinements. When the documentation is complete it will be published to ProQuest and archived at the Wallace Library. After publication, this project will be entered into a variety of competitions and publications.

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### Competitions:

Communication Arts Advertisement Competition  
Communication Arts Design Competition  
Communication Arts A' International Design Award Competition  
Graphis Poster Annual  
Graphis Design Annual  
Spark Design Awards

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### Publications:

Communication Arts  
Eye Journal  
Graphis

Information Design Journal  
Print Magazine  
Visible Language



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## Survey of Literature

The most important element of my research is understanding the rationale behind information design and how it can be applied to the medical applications. Analyzing the current state of academic initiatives involving medical design will help to accurately represent the processes and impact of these programs. This research helps generate a deeper understanding of the subject matter, determine the appropriate audience, and learn about previously attempted solutions. The goal at this stage is to put the project into context, develop empathy for the audience, and gain a better understanding of what others have done. The survey of literature is divided up into sections based on the design inquiry, subject matter or technical aspect. Within each category the sources are ordered by relevance to the design problem.

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### Design Inquiry Literature

*Information Design*  
Robert Jacobson, editor  
MIT Press, 1999  
Cambridge, Mass.

This edited collection of articles covers the basics of information design, why it is important and how it is applied. This book illustrates the necessity of information design, its societal importance and how it has evolved into a profession. It touches on design theories such as sensemaking and wayfinding. It also includes the responsibilities and ethics involved in this new discipline and its future implications. This information is essential to understanding how to best apply information design in order to visually communicate effectively.

*The Power of Design:  
A Force for Transforming Everything*  
Richard Farson  
Greenway Communications, 2008  
Norcross, GA

The author explains the influence that design has on society and how design is a tool for coping with the challenges of a rapidly evolving world. He argues that the exponential increases in population, technology and industry creates a need for design. This book shows how design has and will continue to be instrumental in individual and planetary success. It recognizes the role of the designer in the big picture and their responsibility to society. These design philosophies can be applied to the medical field which is also a rapidly changing landscape of technology.

*An Introduction to Information Design*  
Kathryn Coates, Andy Ellison  
Laurence King Publishing, 2014  
London

This book covers the fundamentals of information design with a modern perspective. It clearly states what information is, why it is important and how it is used. It covers the major topics of design including defining an audience, using a grid structure, providing readability, creative exploration and multi-platform delivery. It is one of the few sources that talks about information design methods in the realm of new digital media.

*Designerly Ways of Knowing:  
Design Discipline Versus Design Science*  
Nigel Cross  
Volume 17, Issue 3, Pages 49–55  
Massachusetts Institute of Technology, 2001  
Design Issues

This paper analyzes the relationship between the methods involved in science and design. The goal is to examine the design process for developing scientific products. The costs and benefits of a scientific approach to design are explored. The history of the scientific design process is used to give context to this paper. This research explains how science and design interact and how an analytical approach can be applied to the design process.

*Information Design:  
The Way Ahead*  
Jim Davies  
Volume 20, Issue 4, Page 18  
Centaur Communications Ltd., 2005  
Design Week

This article serves as a preview to an exhibition at the Design Museum that is dedicated to the pioneers of information design. The author explains that the more successful information design then the less noticeable it is. Information design is so integrated into daily life that it helps to determine every choice and action. Everything from getting to work on time to knowing which sports team is winning, is communicated through information design in many different forms. The traditional applications of this area of design are examined in contrast with its application in new digital and web media.

*Information Design*  
Peter Esmonde  
Volume 47, Issue 1, Page 108  
F&W Publications, Inc., 2000  
ID

This article is comprised of critical design dilemmas and their solutions described by informed professionals from various disciplines. The goal is to show that there is no single formula that can be used to solve every design problem. Information design is a dynamic cognitive process that involves many topics of study including psychology, information theory, semiotics and design research. Multiple theories are explained including sensemaking, a process of analyzing design through concepts relating to time, movement and spacial relationships.

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Subject Matter Literature

*Design for Care:  
Innovating Healthcare Experience*  
Peter H. Jones  
Rosenfeld Media, 2013  
Brooklyn, New York

This book gives precedence for applying effective design to many areas of the healthcare industry. The focus is on providing designers with practices, system thinking and research methods that allow for effective design solutions to evolving medical problems. It covers important considerations for approaching medical problems, such as patient-centered design, systemic design and design as caregiving. These arguments support the mission of every medical design initiative and prove that they are necessary to compensate with a rapidly changing field.

*The Design Necessity*  
Ivan Chermanyeff  
MIT Press, 1973  
Cambridge, Mass.

This casebook proposes a rationale for the necessity of design. There are 10 performance criteria that illustrate this necessity through a variety of case studies. These examples demonstrate design application to a range of fields such as communication, interiors, environments and architecture. This system of reasoning was developed for the First Federal Design Assembly in Washington, D.C. where designers increased administrators' awareness of the importance of design. This was one of four initiatives under the Federal Design Improvement Program, which focused on improving the quality of design in government applications, including Federal buildings and publications.

*Design Integrations:  
Research and Collaboration*  
Sharon Poggenpohl and Keiichi Sato, editors  
Intellect, The University of Chicago Press, 2009  
Chicago, IL

This is a critical look at the present and future of design research and collaboration. In chapter twelve, Judith Gregory gives an example of a complex model involving international and intercultural collaboration. This cooperative model is geared towards health information systems and shows the link between information and medical design. In chapter ten, R. Roger Remington explains an academic model involving three institutions of higher education. Remington discusses the complex relationship and challenges of national collaborations. This book gives an excellent analysis and context of interdisciplinary and cross-cultural design in higher education.

*Designing for the 21st Century:  
Interdisciplinary Questions and Insights*  
Tom Inns, editor  
Gower Publishing Limited, 2007  
Hampshire, England

This book showcases the research projects developed by the 21st Century Research Initiative. They are successful examples of collaborative design projects for health and wellness. Each project shows many instances of implementing design strategies such as spatial, sensory and people-centered design. There are medical design projects involving inclusive environmental design of health public spaces. This variety of design application in an academic setting demonstrated the versatility and potential of interdisciplinary design students.

*A Culture of Creativity:  
Design Education and The Creative Industries*  
Billy Matheson  
Volume 25, Issue 1, Pages 55–64  
Emerald Group Publishing Limited, 2006  
Journal of Management Development

This paper shows the impact of creative industries on design education. The examples in this research are based on design programs in New Zealand that are working to keep up with the new holistic approach to creative design. There is a focus on the fluctuating relationship between the professional and academic sides of the industry. This information provides insight into the changing dynamic between these institutions.

*Interdisciplinary Product Development  
Education at MIT and RISD*  
Steven D. Eppinger and Matthew S. Kressy  
Volume 13, Issue 3, Pages 58–61  
Design Management Journal, 2010

This article explores the interdisciplinary curriculum at MIT and RISD in relations to product design. The design processes used in these classes are explained in detail. The student projects included in this document exemplify how multiple disciplines are fundamental to the processes of product design and development. This research helps explain the purpose and importance of programs that incorporate interdisciplinary education.

*Teaching Innovation Through Interdisciplinary Courses  
and Programmes in Product Design and Development:  
An Analysis at 16 US Schools*  
Sebastian K. Fixson  
Volume 18, Issue 3, Pages 199–208  
Blackwell Publishing Ltd., 2009  
Creativity and Innovation Management

This paper compares and contrasts 14 courses and 3 programs at 16 leading US schools. All of the programs that are analyzed have a focus on interdisciplinary product design. The main goals of these classes include incorporating multiple disciplines, utilizing a heuristic process and product design and development. This research explains how multiple universities implement collaborative curriculum through various methods. The benefits of these programs are revealed, as well as how they can be improved.

*Illustrator CC: for Windows and Macintosh*

Elaine Weinmann  
Peachpit Press, 2014  
Berkeley, CA

This visual guide for the latest version of Adobe Illustrator is essential to any design project. It covers all of the tools and capabilities of this creative software. It is useful for building a more efficient workflow and developing a better technical understanding of the program. Keeping up with the new features is necessary throughout any academic and professional career in design. Digital assets are available online for completing the example exercises provided by the author.

*Photoshop CC Top 100 Simplified Tip & Tricks*

Stan Sholik  
John Wiley & Sons, 2013  
New Jersey

This book is for designer who are already familiar with the basics and are ready for more advanced techniques. Understanding the industry standards in file preparation and printing is necessary for any print media in an awareness campaign. Topics covered include processing photos in camera raw, preparing images for output and video editing in Adobe Photoshop. These capabilities are also applicable to the digital components of an awareness campaign.

*Interactive InDesign CC:*

*Bridging the Gap between Print and Digital Publishing*

Mira Rubin  
Focal Press, 2013  
Massachusetts

This book explores the digital application of Adobe InDesign. The focus is on interactive PDFs and digital publishing. These aspects of this software are useful for prototypes and demos to help convey design projects. The topics in this book include document navigation flash animation and EPUB. Digital automation is a key function of layout software in the design industry.

*The Design of Advertising:*  
*An exploration of current practices and techniques*  
Roy Paul Nelson  
Volume 13, Issue 3, Pages 58–61  
Design Management Journal, 1967

This book explores traditional practices and techniques of advertising design with a target demographic of college-level advertising students. From a design student perspective, this book gives an understanding of basic advertising methods and how to apply design theory to print campaigns. It reveals the thought process behind layout design for awareness campaign purposes. The historical information about communication design may also help to develop historical context for a medical design campaign.

*Sensation:*  
*Theme Promo & Campaign Graphics*  
Edited and published by  
Sandu Publishing CO., Ltd., 2012  
Guangzhou, China

This collection of high-level design projects is sponsored by Design 360. The contents encompass packaging, promotional and campaign design. This visual resource reflects the qualities necessary for successful design for awareness. The variety of brands, industries, products and services involved create a diverse source of visual communication techniques and concepts.

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