

BIO-INNOVATION

university of virginia graduate seminar

the course

The Bio-Innovation Seminar began as a collaboration between faculty members of the Biomedical Engineering, Nursing, Architecture and Business Graduate schools at the University of Virginia.

Multi-disciplinary problem solving is an essential component of innovation, especially in complex systems such as health care. The overall goal of this course is to provide graduate students with supervised real-world experience identifying problems in health care and developing solutions using a collaborative approach.

Graduate students work in multi-disciplinary teams to identify problems and create solutions that can be viable products, systems, and policies. Because of the highly interactive nature of this course, students are expected to be entrepreneurial, resourceful, and highly motivated.

the faculty

Anselmo Canfora

School of Architecture, Assistant Professor
Director of Initiative reCOVER

David Chen

Biomedical Engineering
Director of the Coulter Partnership

Deborah Conway

School of Nursing, Assistant Professor
Director of the Health Product Evaluation Center

Jeffrey Holmes

Biomedical Engineering, Associate Professor

Philippe Sommer

Darden Graduate School of Business
Director of Entrepreneurship Programs

William Sherman

School of Architecture, Associate Professor
Associate Vice President for Research
Founding Director of **OpenGrounds**



the healthcare partners

Students have worked with a variety of units within the University of Virginia Hospital, including:

- Acute Cardiology Patient Care Unit
- Echocardiology Department
- Gastro-intestinal Surgery Patient Care Unit
- Kluge Children's Rehabilitation Center
- Operating Room
- Transplant and Urology Patient Care Unit

Other units within the hospital continue to express interest in partnering with the students of the Bio-Innovation Seminar.

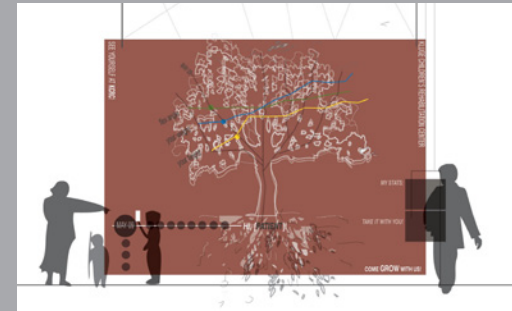
the students

Graduate students have joined us from...

School of Architecture
School of Engineering and Applied Sciences
Darden Graduate School of Business
School of Nursing

Together the students learn to...

- Work across disciplinary boundaries between departments and schools
- Move projects forward after the initial design process
- Coordinate the logistics of working in a team setting



Culture

Behavior



KCRC - Identity [SP 09]
Four East - Communication [FA 10]



the process

Instruction in the Bio-Innovation Seminar is hands-on, student-driven, and involves stakeholders and consultants from a variety of fields. The semester is organized in three parts:

Research, Analysis + Evaluation

Through observation and research, students familiarize themselves with the department, client/stakeholders, and resources available to them.

Development of Problem Proposal

After developing a base understanding of the processes involved in the department of focus, students propose areas where a more focused study could impact and improve the function of the department.

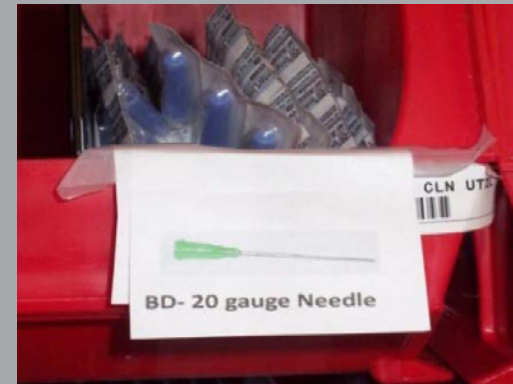
Project Development and Conclusion

Students develop proposals to tackle the problem area they selected, and focus on presenting their research, methods and solutions to an audience of faculty members, fellow students, and members of the department they studied.

the objectives

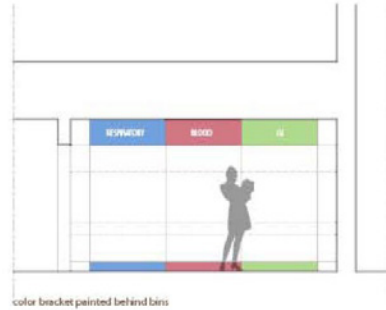
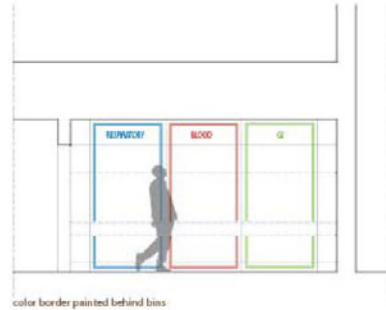
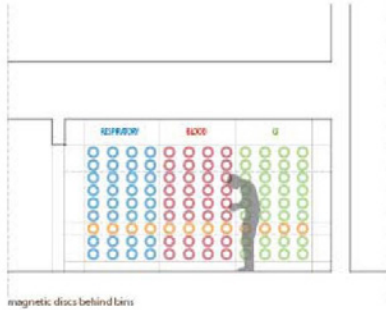
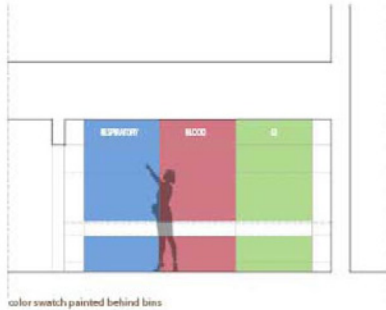
Students experience...

- first-hand problem identification in a real-world healthcare setting.
- the establishment and maintenance of a cross-disciplinary language.
- a working knowledge of the tools of market research.
- the regulatory process and clinical development as they impact technology design.
- intellectual property and licensing opportunities and constraints



Pharmacy - Supply Room [SP 08]





Supply Room

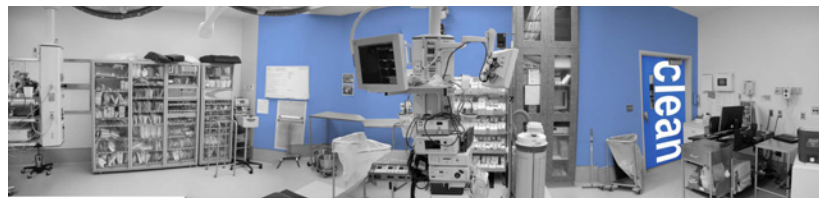
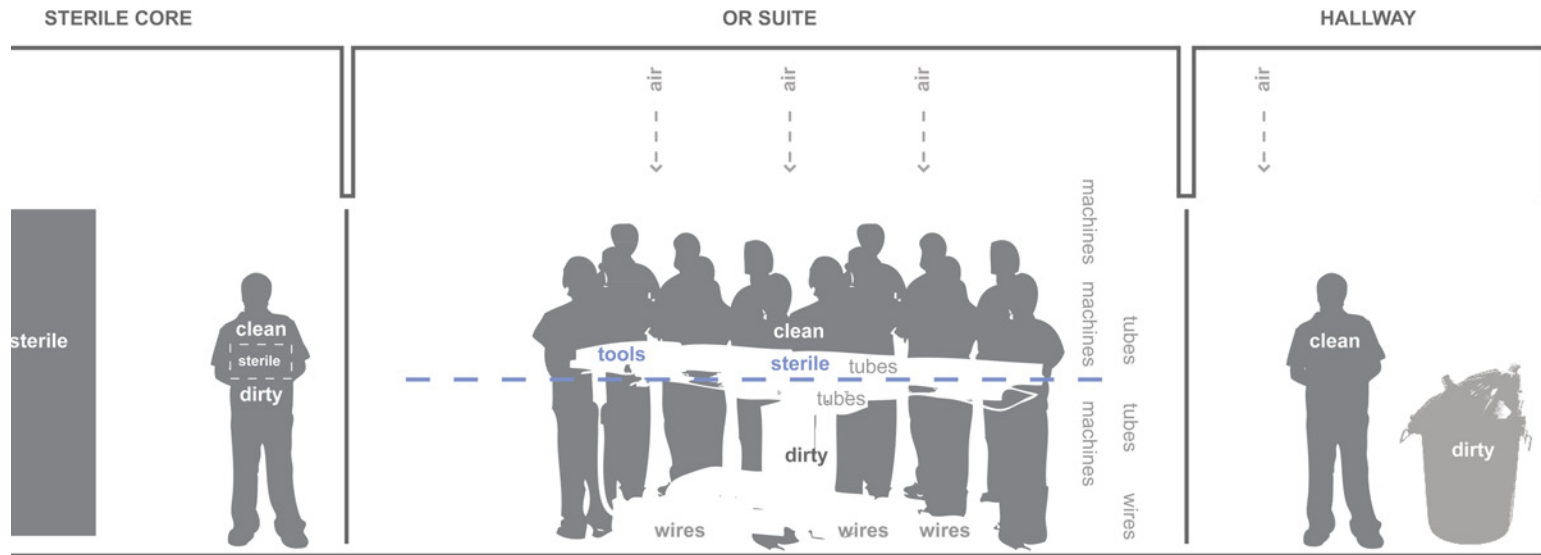
SPRING 2008

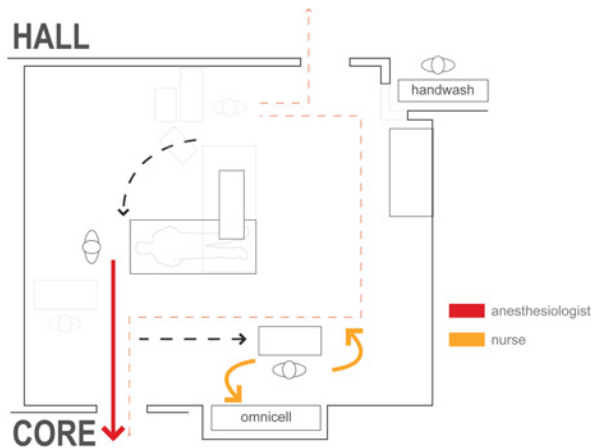
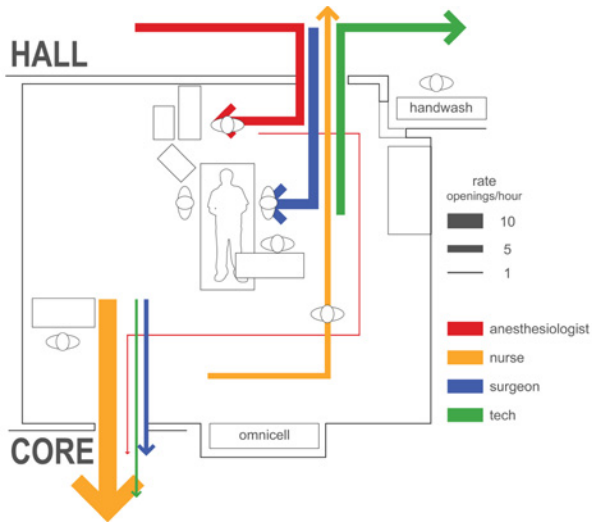
Avantika Chakravorty [Darden]

Kip Marshall [SoA]

Megan Ott [SoN]

After observing the struggle to keep the hospital supply room organized, the team developed a system of labeling, color-coding and spatial division to maintain order and minimize the number of mistakes in pulling supplies. This minimized both time wasted by medical staff and mistakes in patient care.





OR Innovations

SPRING 2009

April Cannon [SoN]

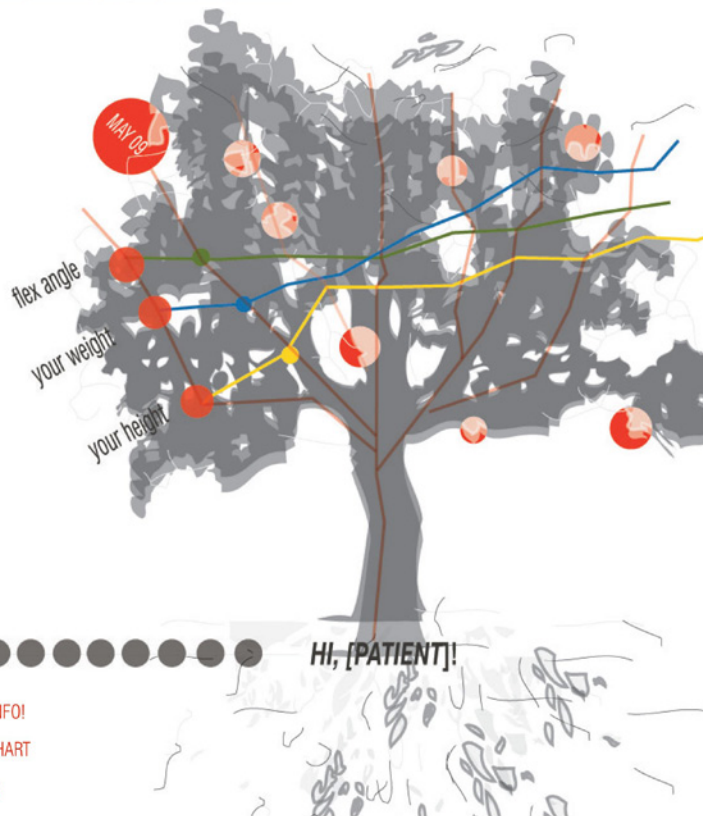
Charlie Haggart [BME]

Tom Hogge [SARC]

After observing procedures in the operating room, the team identified a major inefficiency - foot traffic. Nurses, anesthesiologists, technicians, and students moved in and out for various reasons throughout a procedure. Not only did this slow the surgeon's work, but it compromised the sterile environment. The team identified the most prominent reasons for foot traffic and suggested changes to the traffic pattern and organization of the operating room to reduce the number of these instances.



**MY
PORTAL**



KCRC Interface

SPRING 2009

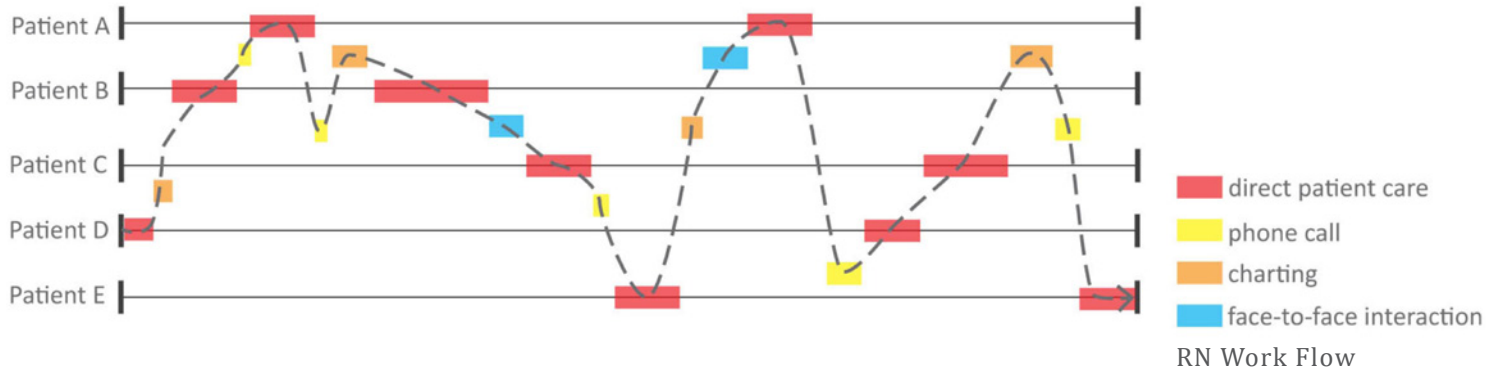
Anne Fishwick [SoN]

Lauren Hackney [SARC]

James Hill [Darden]

Linsey Phillips [BME]

The project aimed to improve patient and professional experience through a re-design of the digital identity of the Kluge Children's Rehabilitation Center. A digital and physical presence in the child's life connects the family and patient to their caregivers, and supports the staff in continuing to give dynamic care across the course of the patient's involvement with KCRC.



Currently the information moves to you by:



Patient



pushes call button



and talks to HUC



who finds



you at the Pyxis.

But you would prefer the following method:



Patient



pushes call button



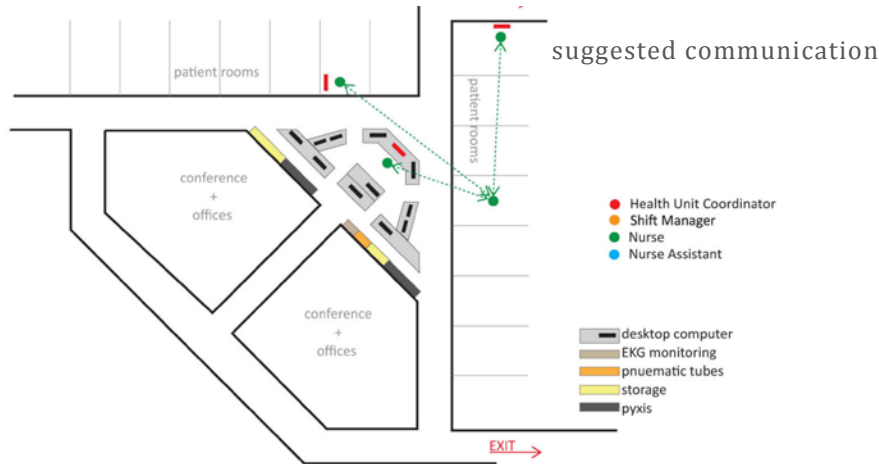
and talks to HUC



who writes a text message



to you.



Four East

FALL 2010

E. Andy Ortiz [BME]

Alexis Bradshaw [Darden]

Kim Brantley [BME]

Amanda Swanekamp [SARC]

The team observed that most patient requests went first to a staff member without medical training, who routed it to a staff member who could provide patient care. In order to minimize the number of interruptions a nurse experiences and to increase patient satisfaction, a series of recommendations were made to help the non-medical staff prioritize information for the medical staff members, as well as improve the ability of nurses to transfer information among the staff.

BIO-INNOVATION

supported by...

OpenGrounds

for more information, contact....

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