

NICView: An Interactive Neonatal Case Simulator

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Problem Statement

- Because of new work hour limit restrictions on residents in the Neonatal Intensive Care Unit (NICU), they lack sufficient proficiency in identifying and performing basic interventional procedures, such as differential blood pressure, chest compressions, and intubation, in a timely manner.

Primary Objective

- To create a product that solves the problem of NICU resident inexperience in a convenient and effective manner.

Needs Assessment

- A safe and convenient method for residents in the NICU to practice procedures.
- A conceptual virtual learning tool that accentuates the physical practice residents receive in the NICU.
- A practice tool that will expose residents to a large variety of cases.

Quantitative Measurements of Achievement

- Time to accomplish scenarios
- Comparative skill sets
- Pre- and post-tests
- Point System

Example of the Grading Rubric

Shock in a 12 Day Old

Points	Action	Importance
10	Asking for girth	Girth will impede resuscitative efforts.
10	PPV	If not started, vitals will decrease.
10	Chest Compressions	Must choose amount per minute; stop once vitals rise
10	Intubation	Must use all relevant equipment in the right sizes and methods
10	Epinephrine	Correct as long as heart rate is under 60; Results in increase in vitals
10	Replogle	Must be done within 2 minutes; decompresses the stomach

Goals

- User-Software Interaction
 - Interactive
 - User-friendly
- User-Administrator
 - Feedback system
 - Consequence/Reward
- User-User Interaction
 - Forum
 - Recordable data

Background

- Current standard
 - Practice in the hospital
- Current Solution
 - Simulation doll
 - Pros
 - Cons



<http://www.kyforward.com/our-health/files/2013/07/doll.jpg>

Benchmark for Measuring Care

HOW IS THIS DOCTOR AT ...	RATING SCALE					
	Poor	Fair	Good	Very Good	Excellent Evaluate	Unable to
1. Telling you everything; being truthful, upfront and frank; not keeping things from you that you should know	1	2	3	4	5	#
2. Greeting you warmly; calling you by the name you prefer; being friendly, never crabby or rude	1	2	3	4	5	#
3. Treating you like you're on the same level; never "talking down" to you or treating you like a child	1	2	3	4	5	#
4. Letting you tell your story; listening carefully; asking thoughtful questions; not interrupting you while you're talking	1	2	3	4	5	#
5. Showing interest in you as a person; not acting bored of ignoring what you have to say	1	2	3	4	5	#

Design Approach

- System and Environment
 - Will be played individually at home
 - Will be in 2D
 - Constructed in the form of a vignette

Desired Outcomes

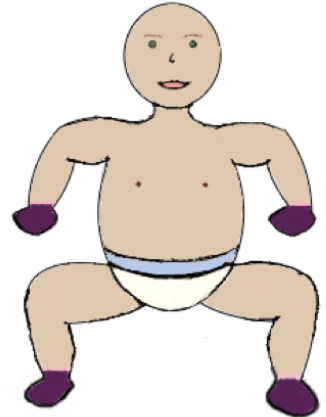
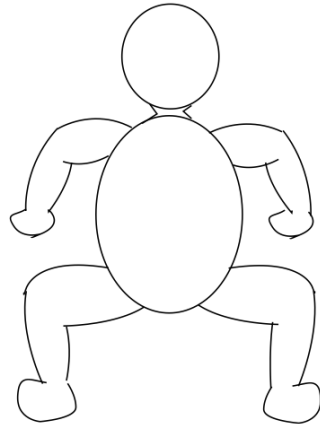
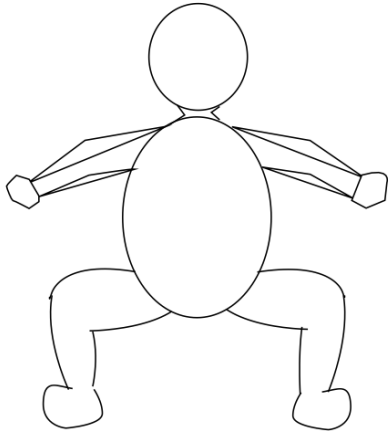
- Residents and medical school students should be able to use our program at home
- The NICU should see increased problem-solving competency and confidence in their residents
- Our program should be modifiable to add more scenarios as desired

Dr. Krakauer Meeting

- We are paring down the number of scenarios to focus on the quality of the scenarios we currently have.
- Focus in on specific skill sets we can measure progress on, like intubation and chest compressions.
- Dr. Krakauer will provide us with sound files of the baby.
- She will also provide us with the pre and post survey questions to mark conceptual learning progress.

Current Progress

- Graphics
 - Color and detail
 - Rest of medical instruments



Current Progress - Unity

- Objects are draggable
- Collisions can be detected
 - Determine if correct collision has happened and trigger appropriate event

Demonstration

Work Plan

- Spring Break
 - Finish programming scenarios one and two
 - Medical equipment inventory
 - Test for collisions in sequence
 - Add in points system and timer display
 - Receive post surveys and sound files from Dr. Krakauer
 - Finish designing and coloring all medical equipment
 - Observe a CELA training session