Student Technology Fee
Special Initiative Request Form
Fiscal Year 2010-11
Northwestern State University of Louisiana

ALL BLANKS MUST BE FILLED COMPLETELY

Prepared by: _____Gil Gilson_____   For: __Meti BabySim_____

Department/Unit:_Nursing_____   College:_Nursing_____   Campus:_Shreveport_____

Which NSTEP Goals/Objectives does this project meet?___Objectives 1,3,7,8_____

Requested equipment will be located/installed/housed? Building_300 Warrington Room_231__
Are department property policies and procedures in place for requested equipment?_____Yes___

Which individual will be responsible for property control of the requested equipment?

Signature: _____   Date:_____8-13-10_____

Proposal Requested Amount: $_52,683.25_____   Budget Attached (circle one): YES/NO

Proposal delivered to Student Technology located in Watson Library, Room 113. Date__8-13-10

The proposal must include all specifications, description, model number, quotation, cost, state contract number, and vendor for each item. If the proposal does not include all requested information, it will be retuned to requestor.

1. Describe target audience. The audience will include all upper level Nursing Students, which will include all students in the clinical class rotations.
2. Describe project/initiative for which you are requesting funds. Funds are requested to purchase Meti BabySim, the only patient simulator that employs multiple models of human physiology. Sophisticated mathematical models of human physiology and pharmacology automatically determine the patient's response to user actions and interventions. This simulator will enable the nursing clinical students to have access to simulators ranging from adult, young child, and the BabySim. The BabySim interacts with the learners and automatically responds to clinical interventions in a physiologically appropriate manner.
3. State measurable objectives that will be used to determine the impact/effectiveness of the project. The measurable objectives are determined by the results that students receive from having access

to a model that responds to user actions and interventions. Students are guided by their clinical professor; the patient outcome is the result of clinical interventions, and provides a platform for objective performance assessment by the clinical instructor.

4. Indicate how each project objective will be evaluated.

Evaluation of the results of clinical interventions by our clinical students are measured by the results of those interventions on the BabySim. Professors discuss with the clinical students the results and provide the platform for objective assessment. Evaluations are done by the clinical professors in accordance with College of Nursing guidelines.

5. If funded, which NSTEP http://www.nsula.edu/nstep/NSTEP.pdf objective(s) will this funding of this project advance. How will funding of the project advance the University and College/unit technology plan?

The NSTEP objectives that this funding will advance include but are not limited to:
Objective 1. Improve access to technology by students, faculty and staff.
Objective 3. Upgrade laboratories with modern technology.
Objective 7. Encourage technology initiative by faculty, staff, and students.
Objective 8. Encourage innovation and research.

Funding of this project will advance the quality and effectiveness of the nursing clinical process, which advances the University and College of Nursing technology plan. This simulator is action-oriented and ultimately defined by the results clinical students receive in the interaction and results that are simulated by the BabySim. This simulator allows our students to work with the most advanced technology available in the medical arena.

6. Provide a justification for funding of this project. Estimate the number of student that will be served per academic year and in what ways. Please indicate also any unique needs of the target group.
Justification of funding for this project will be the results that our students will receive from the

use of this simulator. This simulator gives our students a valuable hands on approach to the clinical process with measurable results without any negative effects to the patient. Funding for this project allows NSU students to work with the most advanced technology equipment available in the medical field.

500 clinical students will have access to this technology each semester. This simulator meets the unique needs of nursing students with dynamic coupling of the cardiovascular, pulmonary and pharmacological models along with the physical embodiment of the mannequin. The BabySim interacts with the learner and automatically responds to the clinical interventions in an physiologically appropriate way, and provides a platform for objective performance assessment.

7. List those individuals who will be responsible for the implementation of the project/initiative and indicate their demonstrated abilities to accomplish the objectives of the project.

All Clinical instructors will have access to these assessment tools in the clinical setting in our Warrington Simulator labs.

8. Describe any personnel (technical or otherwise) required to support the project/initiative.

Technical support will be available from David Lamb Shreveport's Technical Support Specialists, technical support supplied by METI the developer of the BabySim. Other support will be provided by Gil Gilson, Director of Support Services, Shreveport Campus.

9. Provide a schedule for implementation and evaluation.

The simulator will be worked into the clinical rotation as soon as it can be received and implemented.

10. Estimate the expected life of hardware and software. Explain any anticipated equipment/software upgrades during the next five years.

The expected life of the hardware is up to ten years, upgrades to the simulator should be implemented as new technology is developed for the simulator. The Nursing professional fee will be used to update and repair.

11. Explain in detail a plan and policy that will be in place to ensure property security/controls for any equipment received through a Student Technology Fee.

If you are requesting equipment that will be either/or checkout to students or moved within the department, you must provide a checkout/loan policy.

The College of Nursing at present houses five state of the art simulators from METI, these unit are housed in the lab settings in our Warrington complex. Simulators are kept in labs with combination locked doors. Only clinical instructors have access to the labs which are kept locked at all times. The Warrington building is monitored by an onsite security service; this service is on duty during all hours that the building is open.

12. Attach a detailed budget.

Budget is attached.

METI Learning

Quote

6300 Edgelake Dr.
Sarasota FL 34240
United States
Fax (941) 377-5590
Tax ID # 22-3437089

Date	8/11/2010
Quote #	128318
Terms	
F.O.B. Sarasota	
Expires	11/9/2010
Sales Manager:	Meyer, Coby
Phone Number	(941) 504-4737

Attention:
Accounts Payable
Northwestern State University of Louisiana
St Denis Hall
Natchitoches LA 71497
United States

Ship To:
Northwestern State University of Louisiana
1800 Line Ave
Shreveport LA 71101
United States

Item	Quantity	Description	Unit Price	Amount
BAB-101	1	BabySIM Base Unit BabySIM Patient Simulator Includes: Full Body Instrumented Infant Mannequin, Instructors Laptop Workstation, Waveform Display, Muse Software, 1 Patient, 4 Simulated Clinical Experiences, First Year Full System Warranty.	45,360.00	45,360.00
AIR-003	1	In-Room Portable Air Compressor - 120 VAC / 60 Hz	4,872.00	4,872.00
SFW-014	1	ASL, Program for Nursing Curriculum Integration, BabySIM	2,540.00	2,540.00
WAR-060	1	First Year ECS System Warranty Upgrade (to Premier)	2,163.00	2,163.00
Subtotal				54,935.00
5% Discount			-5.00%	-2,746.75
Shipping & Handling	1	Shipping & Handling		495.00

Total $52,683.25

METI BabySIM™ Specification/Clinical Features

This document provides sole source justification for the acquisition of the METI BabySIM. Each of the capabilities listed below uniquely meet the requirements of the end-user and are available only with the METI BabySIM.

1. The METI BabySIM is the only patient simulator than employs multiple models of human physiology. Sophisticated mathematical models of human physiology and pharmacology automatically determine the patient's response to user actions and interventions. With dynamic coupling of the cardiovascular, pulmonary and pharmacological models along with the physical embodiment of the mannequin, the METI BabySIM interacts with the learners and automatically responds to clinical interventions in a physiologically appropriate way. Thus, patient outcome is the result of clinical interventions, and provides a platform for objective performance assessment.

2. The METI BabySIM is the only patient simulator with cardiovascular system models that automatically calculate dependent variables (e.g., blood pressure, heart rate) in response to changing cardiovascular system status (e.g., bleeding, intravenous fluid administration).

   a. A baroreceptor reflex model automatically compensates both centrally (e.g., heart rate, cardiac contractility) and peripherally (e.g., systemic vascular resistance, venous capacitance) to maintain circulation and perfusion.

   b. Arterial blood gases (e.g., PaO_2, $PaCO_2$, and pH) and mixed venous gases (e.g., PvO_2, $PvCO_2$) are automatically calculated.

   c. Hematocrit is automatically calculated to reflect oxyhemoglobin saturation and administration of a variety of intravenous fluids, such as whole blood, packed red cells, colloids, and crystalloids.

   d. A complete hemodynamic monitoring package includes the capability to measure and monitor the following:

      i. Arterial blood pressure

      ii. Left ventricular blood pressure

      iii. Central venous pressure

      iv. Right atrial pressure

      v. Right ventricular pressure

      vi. Pulmonary artery pressure (including "floating" the catheter from atmosphere to the pulmonary artery)

      vii. Pulmonary artery occlusion (wedge) pressure

      viii. Continuous Cardiac Output

3. The METI BabySIM is the only patient simulator with pulmonary system models that automatically calculate alveolar and arterial gas partial pressures in response to ventilation, fraction of inspired oxygen, intrapulmonary shunt fraction, and metabolic gas exchange.

    a. During spontaneous ventilation, the patient mannequin will breathe with a spontaneously controlled respiratory rate and tidal volume to maintain normocarbia and adequate oxygenation.

    b. Apnea or hypoventilation automatically results in hypercarbia, hypoxemia, decreasing oxyhemoglobin saturation, and tachycardia.

    c. Positive pressure ventilation or return of spontaneous ventilation automatically reverses apnea (providing the patient has not already expired from cardiovascular collapse) with the response appropriate to the rate and tidal volume of ventilation.

    d. The patient simulator automatically responds to the fraction of inspired oxygen present, such as with smoke inhalation or supplemental oxygen.

4. The METI BabySIM is the only patient simulator with pharmacology system models that automatically calculate both the pharmacokinetics and pharmacodynamics for 6 intravenous medications, yielding appropriate changes in patient clinical signs and monitored parameters.

    a. For example, a patient receiving a muscle relaxant will automatically yield hypoventilation, eyelid closure, decreased oxyhemoglobin saturation, and bradycardia. Positive pressure

ventilation will stabilize the patient until the drug is metabolized and eliminated, yielding a return to spontaneous ventilation and stabilized vital signs.

b. An instructor only needs to enter the drug dosage—all patient responses are automatic, dose dependent, and follow an appropriate time course.

5. The METI BabySIM is the only patient simulator that can be used to objectively evaluate clinical performance because patient outcome is based solely on patient physiology and the treatment administered (e.g., ventilation, oxygen therapy, drug therapy). Although intravenous medications must be entered into the system computer, an operator need not be a clinical expert in that particular drug and how it would impact the patient response in the simulation. Thus, not only is performance based on the objective clinical outcome, but it is not influenced by a subjective assessment of the operator, thus greatly reducing the risk of negative training transfer.

6. The METI BabySIM is the only patient simulator with a simulated monitor capable of displaying all of the following parameters.

Patient Parameter	Waveform	Numeric
ECG Leads I, II, III, V		✓
Arterial Blood Pressure	✓	✓
Pulmonary Artery Pressure	✓	✓
Pulmonary Capillary Wedge Pressure	✓	✓
Central Venous Pressure	✓	✓
Pulse Oximetry Plethysmogram	✓	✓
Pulse/Heart Rate		✓
Mean Arterial Pressure		✓
SpO2		✓
Continuous Cardiac Output		✓

Blood Temperature ✓

Body Temperature ✓

Non-invasive Blood Pressure ✓

    a. Alarm limits with accompanying sounds can be configured for each parameter.

    b. When pulse/heart rate is monitored, an accompanying sound is played in synchrony with the cardiac cycle, as monitored by the ECG, arterial blood pressure, or SpO2.

    c. When SpO2 is monitored, the cardiac sound pitch dynamically correlates with oxyhemoglobin saturation.

7. The METI BabySIM is the only patient simulator with an airway (mouth, oropharynx, larynx, esophagus, trachea, carina) Thus, the BABYSIM offers superior anatomical realism and airway management performance.

    a. Direct laryngoscopy as well as oral and nasal tracheal intubation can be performed

    b. Airway adjuncts (e.g., combitube, laryngeal mask airway) work as they do in real patients without any special adjustments by the instructor (e.g., activation of posterior swelling to seat the LMA) or clinically unrealistic maneuvers by the trainee (e.g., hyperinflation of the combitube oropharyngeal balloon to seal the upper airway).

    c. Because of the pulmonary system model, success or failure of airway management can be objectively assessed with the resulting ventilation, oxyhemoglobin saturation, and overall cardiopulmonary stability.

8. The METI BabySIM is the only patient simulator with full trauma simulation capabilities, including support for:

    a. Pneumothorax needle decompression on the right side of the mid clavicular line of the second intercostal space

b. Chest tube insertion (with fluid return) at the mid-axillary line of the 5th intercostal space

Each trauma capability requires minimal instructor input.

The METI BabySIM is the only patient simulator with fully independent left and right lungs.

c. A one-sided pneumothorax can be simulated with chest distention on one side, with the other side rising and falling with spontaneous breathing.

d. Breath sounds are independent and linked to ventilation of each lung for both spontaneous and mechanical ventilation.

e. One-lung ventilation automatically results in appropriate breath sounds, chest excursion, and pulmonary gas exchange.

9. The METI BabySIM is the only patient simulator with independent blinking eyes and adjustable pupils. Eye blinking is automatic and dependent on the underlying patient physiology (i.e., level-of-consciousness, level of neuromuscular blockade). Pupils can be manually set to three different settings (i.e., pinpoint, normal, blown).

10. The METI BabySIM is the only patient simulator with bi-lateral palpable pulses in the following locations:

a. Brachial

b. Femoral

11. The METI BabySIM is the only patient simulator with an advanced cardiac life support system in which:

a. Effective chest compressions automatically yield artificial circulation, cardiac output, central and peripheral blood pressures, palpable pulses, and exhaled CO_2.

b. Ineffective chest compressions yield inadequate cardiac output and circulation and an absence of exhaled CO2.

c. Defibrillation energy is automatically identified, quantified, and logged

d. Pacing current is automatically identified, quantified, and logged, with appropriate physiological response.

12. The METI BabySIM is the only patient simulator that includes independent simulations of a 3-6 month old male/female with interchangeable genitalia.

a. Any patient can be created with any scenario, creating a wide variety of clinical care simulations.

b. Multiple patients can be run simultaneously to create multi-patient care simulations.

c. Multiple injury/disease scenarios can be run simultaneously on a particular patient to create multi-trauma simulations.

13. The METI BabySIM is the only patient simulator that includes educationally complete clinical simulations. Each clinical simulation is documented on a one-page card for the instructor and includes:

a. Clinical background and scene

b. Pre-hospital and emergency department learning objectives

c. Student critical actions

d. Simulation algorithm

e. Equipment required for the simulation

f. Instructor notes

14. The METI BabySIM is the only patient simulator with a wireless remote control that presents a user interface identical to that of the main instructor's workstation. Thus, an instructor need only learn one software interface to operation the system. Furthermore, because the remote control communicated over RF (rather than IR), a physical line-of-site is not required to operate the system. The remote control signal

will penetrate walls and other obstructions and can be located up to 150 feet away from the patient mannequin.

15. The METI BabySIM is the only patient simulator with main control software and a waveform display that run on a single instructor workstation latptop computer. Thus, users can take the instructor's workstation laptop another location to develop simulations independent of the patient mannequin.

16. The METI BabySIM is the only patient simulator that is based-upon the Apple Macintosh Computer Platform, which employs the OS X operating system.

17. The METI BabySIM is the only patient simulator with three levels of available on-site instruction, including:

    a. Installation Training Course—fundamentals of set-up and operation.

    b. Educating with the BABYSIM: Level 1—fundamentals of facilitating student learning, basic simulation design and curriculum integration

    c. Educating with the BABYSIM: Level 2—advanced topics in facilitating student learning, advanced simulation design and curriculum integration, performance assessment, advanced simulation topics (e.g., validation, accreditation, credentialing)

Only METI offers the latter two courses with instruction provided by peer clinician educators (e.g., paramedic, nursing, or physician instructors).