Saving Lives: Teaching Vital Signs Assessment

University of Hawaii at Manoa Learning Design and Technology Dept.
Saving Lives: Teaching Vital Signs Assessment

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University of Hawaii at Manoa
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Purpose Statement

The purpose of this instructional design project is to improve and evaluate an online interactive module for teaching vital signs assessment to first-year radiography students at a community college in Honolulu, Hawaii.
What are Vital Signs?

Body Temperature

Respiration Rate

Pulse Rate

Blood Pressure
Who are Radiographers?
Audience Poll

Have you ever had a diagnostic imaging procedure done at a hospital or clinic?

- X-ray
- CT
- MRI
- Ultrasound
Audience Poll

Have you ever had a diagnostic imaging procedure done at a hospital or clinic?

• X-ray
• CT
• MRI
• Ultrasound
Why is Vital Signs Assessment Important?

Early recognition = quick intervention
Quick intervention = SAVING LIVES
How Can I Teach This?
How Can I Teach This?

Flip that classroom!
How Can I Teach This?

Flip that classroom!
How Can I Teach This?

Flip that classroom!
Target Audience

Radiography students

= 

Millennials
Development of Module
Development of Module
Development of Module

Dashboard

Classes
Groups
Dashboard
News
Welcome
Users
Resources
Admin

Enrolled Teaching 1 Groups Archived Admin

Saving Lives: Learning Vital Signs Assessment

Students 1
Section -
Subject Health

[Image of a medical dashboard with a user interface for NEO Dashboard with a focus on Saving Lives: Learning Vital Signs Assessment]
Development of Module

Saving Lives: Learning Vital Signs Assessment

Lessons

- Lesson 1: Body Temperature
  A description of the lesson goes here.

- Lesson 2: Pulse Rate
  A description of the lesson goes here.

- Lesson 3: Respiration Rate
  A description of the lesson goes here.

- Lesson 4: Blood Pressure
  A description of the lesson goes here.

- Lesson 5: Vital Signs Assessment
  A description of the lesson goes here.

- Complete Required Post-Test
  This final assessment must be completed in order to receive full credit for this course.
Development of Module

Lesson 1: Body Temperature
A description of the lesson goes here.

Lesson 2: Pulse Rate
A description of the lesson goes here.
Development of Module

This assessment must be completed before entering the lessons in this module.

Lesson 1: Body Temperature
A description of the lesson goes here.

Lesson 2: Pulse Rate
Development of Module

Lesson 1: Body Temperature

Index
- Student Objectives
- Identifying Normal Body Temperature Range
- Identifying Abnormal Body Temperature Range
- Determining Normal vs. Abnormal Body Temperature Range
- Test Your Knowledge!

Student Objectives

- Given four temperature readings, you will identify the reading that falls into the normal temperature range without error.
- Given four temperature readings, you will identify the reading that falls into abnormal temperature range without error.
- Given a scenario in the healthcare setting, you will identify whether the temperature reading obtained falls into the normal or abnormal range without error.

Identifying Normal Body Temperature Range

Body temperature is a measure of the body’s ability to regulate the amount of heat generated and released. Temperature is measured using a thermometer on various locations of the body. The forehead, mouth, ear, armpit and rectum are the most commonly used places. For this module, all stated body temperature readings refer to those taken by mouth (orally). The unit of measurement used in expressing body temperature is either degrees Fahrenheit (°F) or degrees Celsius (°C) depending on location; the United States primarily measures in degrees Fahrenheit.

Normal body temperature can range from 97.8 °F and 99.1 °F in a healthy adult, sometimes varying an entire degree over the course of the day. The long-standing convention of a “normal” body temperature reading of 98.6 °F is actually an average of the daily fluctuations. People’s “normal” temperature can go past this range, with no ill effects appearing until temperatures drop below 95 °F or rise above 103 °F. Factors which can affect body temperature include gender, food and fluid levels, emotions, heavy clothing, weather, time of day (highest in the evening), activity level, and hormone levels.

EXAMPLE

Don woke up not feeling very well. Several of his coworkers have been out sick this week with flu symptoms including fever. He uses a thermometer and checks his temperature orally. It says his temperature is 97.9 °F, which falls within the normal range of 97.8 to 99.1 °F.
Development of Module

Saving Lives: Learning Vital Signs Assessment

Lesson 1: Body Temperature

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Lesson 1: Body Temperature

Identifying Abnormal Body Temperature Range

Body temperatures can range an entire degree higher or lower than normal during the course of a day. When temperature readings drop more than one degree below normal, this is known as hypothermia. When temperature readings rise more than one degree above normal, this may indicate pyrexia (commonly known as fever) or the even more serious hyperthermia (sometimes called heat stroke). Abnormal body temperature readings occur when the mechanisms for releasing or conserving heat do not work properly. Children and the elderly are particularly susceptible to abnormal body temperatures.

Hypothermia refers to the condition of having a body temperature below 97.8 °F. This condition becomes dangerous and may be life-threatening once body temperature drops below 95 °F. Hypothermia occurs when more heat is lost than the body can generate. The body tries to fight heat loss by constricting blood vessels and moving blood further in to surround the organs in the core. The body also starts shivering, involuntary muscle contractions which help generate more heat. When these measures do not work, hypothermia sets in.

Some potential causes of hypothermia include:
- cold exposure
- age (being either very old or very young)
- being chronically ill or having an infection
- being under the influence of alcohol or drugs
Development of Module

Lesson 1: Body Temperature

Pyrexia, or fever, refers to the condition of having a body temperature above 100.4 °F. Fever is a temporary increase in the body’s temperature in response to illness, as most viruses and bacteria cannot survive higher than normal temperatures. Hyperthermia is an abnormally high body temperature caused by failure of the body to deal with heat in the environment. Heat stroke is a life-threatening form of hyperthermia that occurs when body temperatures rise above 103 °F, and is accompanied by serious symptoms. The elderly are especially at risk during the hot summer months.

Some potential causes of pyrexia are:
- Infections by viruses or bacteria
- Immunizations
- Autoimmune or inflammatory disorders like arthritis or lupus
- Certain medications

Some potential causes of hyperthermia are:
- Impaired blood circulation or reduced ability to sweat (caused by age or medications)
- Being dehydrated
- Certain medications
- Being very overweight or underweight

<table>
<thead>
<tr>
<th>NORMAL</th>
<th>ABNORMAL</th>
</tr>
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<tbody>
<tr>
<td>Ron feels a bit chilled and takes his temperature orally. The reading says his temperature is 98.8 °F. This falls within the normal temperature range of 97.8 to 99.1 °F.</td>
<td>Janice’s baby has received some immunizations and his skin feels extra warm. She takes his temperature and finds that he has an abnormal reading of 100.3 °F. She will give him a cool bath and continue to monitor his temperature.</td>
</tr>
</tbody>
</table>
Development of Module

Saving Lives: Learning Vital Signs Assessment

Lesson 1: Body Temperature

Determining Normal vs. Abnormal Body Temperature Range

In a healthy adult, body temperature readings usually fall between 97.8 °F and 99.1 °F. Variations in body temperature can occur throughout the day, and potentially rise or fall up to one degree around the established average body temperature of 98.6 °F. Symptoms usually begin to occur when body temperatures move drastically past the normal variation. Abnormal body temperatures occur when the body cannot regulate the amount of its internal heat in extremely cold or extremely hot environmental conditions.

Hypothermia - serious symptoms appear when body temperature drops below 95 °F.

- drowsiness
- weakness and loss of coordination
- pale and cold skin
- uncontrollable shivering
- slowed breathing or heart rate

Pyrexia/Hyperthermia - serious symptoms may appear when body temperature rises above 103 °F.

- headache
- dizziness or lightheadedness
- confusion or combativeness
- rapid, weak pulse or rapid, shallow breathing
- dry, hot, red skin

EXAMPLE

Paul’s checkup at his doctor’s office includes an oral temperature reading. He has not been experiencing any unusual symptoms. The nurse tells him that he has a temperature of 98.8 °F, which is within the normal range of 97.8 and 99.1 °F.
Development of Module

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Hypothermia - serious symptoms appear when body temperature drops below 95 °F.

- Symptoms:
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**EXAMPLE**

Paul's checkup at his doctor’s office includes an oral temperature reading. He has not been experiencing any unusual symptoms. The nurse tells him that he has a temperature of 98.8 °F, which is within the normal range of 97.8 and 99.1 °F.

Great job! 😊 Now continue on to.

Test Your Knowledge!

Congratulations, you have passed this gateway assignment. Click on ‘See Assignment’ below.
Development of Module

Great job! 😊 Now continue on to ↓

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 Congratulations, you have passed this gateway assignment.

Click on "See Assignment" below.

See assignment
Development of Module

Test Your Knowledge!

Question 1

Elaine is a teacher who is on her daily run when she trips over a tree root and twists her ankle. Her doctor refers her to your hospital to get an x-ray of her ankle to assess the injury. She is in a lot of pain and her ankle looks swollen. When checking her into your imaging department, her vital signs are:

- Blood pressure: 132/85 mmHg
- Pulse rate: 60 beats per min
- Respiration rate: 14 breaths per min
- Temperature: 98.6 °F

Identify any abnormal readings which may indicate a possible medical emergency.

Select one or more:

- [ ] Respiration rate: 14 breaths per min
- [ ] Temperature: 98.6 °F
- [ ] Blood pressure: 132/85 mmHg
- [ ] Pulse rate: 60 beats per min
- [ ] None of the above
Data Collection

One-on-one Interviews

Small Group Testing
## Participants and Procedures

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<th>Patient Care Experience (in months)</th>
<th>Previous Experience with Online Courses?</th>
<th>How Comfortable Are You with Using Technology?</th>
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Results and Discussion

Student Performance By Test Item for Units 1-2

- Test Item 1.1: Pre-Test 70%, Post-Test 90%
- Test Item 1.2: Pre-Test 70%, Post-Test 90%
- Test Item 1.3: Pre-Test 90%, Post-Test 90%
- Test Item 2.1: Pre-Test 50%, Post-Test 80%
- Test Item 2.2: Pre-Test 70%, Post-Test 90%
- Test Item 2.3: Pre-Test 20%, Post-Test 80%
Results and Discussion
Results and Discussion
Results and Discussion
Results and Discussion

Student Mastery of Objectives

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<th>Units in Module</th>
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<td>Unit 5</td>
<td>30%</td>
<td>80%</td>
</tr>
</tbody>
</table>
Results and Discussion
## Results and Discussion

<table>
<thead>
<tr>
<th>Attitudinal Survey Responses (n = 10)</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The instruction was presented in an interesting manner.</td>
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<tr>
<td>2. I understood the concepts that were taught in this module.</td>
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<tr>
<td>3. The information presented helped me to achieve the stated objectives.</td>
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<td>7. The tests adequately measured my knowledge of the concepts learned.</td>
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Where To Go From Here?

• Add content
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• Add content
• More practice exercises
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• Make assessments more challenging
Where To Go From Here?

• Add content
• More practice exercises
• Make assessments more challenging
• More interactive components
Thank You!

I truly appreciate the continual support and advice from:

my advisor, Dr. Catherine Fulford
my mentor, Mr. Harry Nakayama
my Critical Friends (Lindsey and Wendy)
and the entire LTEC ohana!
Questions?