

# **Ruth Lilly Health Education Center Health Knowledge Assessment and Childhood Overweight**

## **Project Overview**

The Ruth Lilly Health Education Center (RLHEC) is a community-based, nonprofit organization that provides health education programming to over 80,000 students yearly from grades 1 through 12 and representing urban, suburban, and rural areas of the state of Indiana. The Center provides Indiana youth with knowledge relevant to lifestyle choices that affect overall health. A critical issue facing Indiana is the rising obesity rate, and while relevant health education does not in and of itself assure a behavior change, it is nonetheless a fundamental element in making informed choices. To further its mission in innovative health education programming the RLHEC and the IU Schools of Informatics and Health and Rehabilitation Sciences secured a \$3 million grant from the Indianapolis-based Lilly Endowment to create innovative digital media programming specifically focused on six key priority areas of health, of which obesity was identified as a primary focus. Additionally, the partnership created an opportunity to design and test a tool to perform ongoing standardized assessment of students' health knowledge, use that information to determine strategies of action by teachers, planners, and researchers, and extend the information infrastructure and services to any number of 40 similar centers nationally serving over 3 million children and families each year.

Results of a review of the literature evidenced a paucity of standardized health knowledge assessment tools. Furthermore, there was inconsistency in findings regarding the associations between the health knowledge among youth and health-related behaviors and health status. Therefore, a cross-sectional pilot study was initiated to develop and validate an assessment tool among adolescents in a local school district. Additionally, demographic, anthropometric and contextual data were collected in order to address the following objectives:

1. to ascertain whether there are critical elements of neighborhoods or schools that should be considered as RLHEC strategically plans for the next level of health knowledge dissemination pertaining to nutrition and physical activity.
2. to determine whether there are particular categories of body mass index that may be particularly vulnerable in their lack of health knowledge and thus require more focused attention by the RLHEC
3. to identify unique clusters of variables that define specific subpopulations the Center should strategically focus on in its future program delivery.

The development of a model information management system that has the capability of systematically assessing student health knowledge has the potential to benefit many including classroom teachers; state, local and neighborhood officials; researchers; and leaders of other health education centers.

# Development of a Health Knowledge Assessment Tool for Middle School Students

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## Background

Despite federal-level recommendations and initiatives calling for assessment as a means of promoting health education, there remains relatively little scientific evidence of assessment efforts nationwide. Recommendations by the Institutes of Medicine of special note include ensuring that there is greater focus on assessment. Assessment is also emphasized in the Healthy People 2010 document, which highlights the importance of assessment as a necessity for effective health education curricula.

Current federal initiatives place an emphasis on assessment as a measure of school achievement. Such mandates lead teachers and schools to concentrate valuable class time on content areas other than health. Therefore, health education curricula and subsequent assessment are oftentimes inadequately executed in school settings due to limited time, monetary and personnel resources. New approaches must be considered to combat this problem and to realize an ongoing, systematic, standards-based evaluation process that will aid teachers, communities, policy-makers, and ultimately students.

The aim of this study is develop and test the reliability and validity of an instrument aligned with the state and national health education standards and designed to assess early adolescents' diet and physical activity knowledge.

## Methods

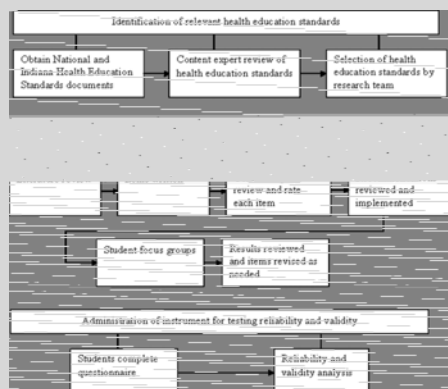


Figure 1: Development of the Health Knowledge Assessment Tool

## Results

### Identification of relevant health education standards

Content experts in health education were sent an electronic survey in the spring of 2006 and asked to rate the importance of each of the year 2000 national health and physical education standards with respect to their relevance to childhood obesity. The content experts were also asked to select up to four of the standards that they considered to be the most important with respect to childhood obesity. The survey was sent to 46 content experts and 21 completed the survey. The items that were rated by more than 50% of the content experts as being very important were also consistent with the four standards that the experts rated as most relevant to childhood obesity. These four standards were used to guide the next step of the process in which items were written to measure these standards at the 8th grade level.

Table 1: Percentage of experts rating standards as important

Which standard(s) do you think is/are the MOST important standard with respect to the rising obesity rate in children? (choose up to four)

Standard	Number of respondents	Percent of respondents agreeing
Students will comprehend concepts related to health promotion and disease prevention to enhance health.	13	59%
Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.	5	23%
Students will demonstrate the ability to use decision-making skills to enhance health.	20	91%
Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce risks.	17	77%
Demonstrate competency in many movement forms and proficiency in a few movement forms.	3	14%
Applies movement concepts and principles to the learning and development of motor	3	14%

## Results cont'd

Table 2: Examples of Health Knowledge Assessment Items

Health Education Standard 1 – Students will comprehend concepts related to health promotion and disease prevention to enhance health. To determine the number of calories present in a food product, a person should look at: 1. Ingredients 2. Nutrition facts label* 3. MyPyramid.gov 4. National dietary guidelines
Health Education Standard 5 – Students will demonstrate the ability to use decision-making skills to enhance health. Carlos ate a cheeseburger, French fries, and cake. Of the following, which is the most healthful choice for Carlos? 1. Eat more protein the next day. 2. Skip breakfast the next day. 3. Reduce fat intake the next day.* 4. Skip dinner that night.
Health Education Standard 7 – Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce risks. Jim wants to increase the amount of fiber and lower the amount of calories in his diet. Which of the following foods would be the best choice? 1. Celery 2. Baked chicken 3. Peanut butter 4. Pear*
Physical Education Standard 4 – Students achieve and maintain a health-enhancing level of physical fitness. Which of the following activities will best control weight gain? 1. Weight training 3 times per week 2. Walking briskly for 30 minutes daily* 3. Yoga daily 4. Running 15 minutes 3 times per week

### Item Analysis

## Discussion

This study represents a first step toward creating a bank of test items designed to measure students' knowledge of the four national health and physical education standards that the content experts identified as being most relevant to childhood obesity.

### Future research directions

•Increase item bank to ensure stable instrument for assessing relevant 2007 health education standards

•Link health knowledge score data with measures of contextual variables to explore socio-cultural and environmental factors that may influence health knowledge

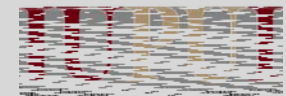
•Develop and replicate an assessment system that can be used by teachers, administrators, researchers and policy makers to design targeted interventions that take into account variations in health knowledge

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# Health knowledge assessment: Improving health literacy among adolescents

Presented by

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for

Society for Public Health Education 58<sup>th</sup> Annual Meeting

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# Overview

- Health Literacy
- Assessment
- Partnerships
- Health Knowledge Assessment Tool
- Validation Study
- Future Directions

- “Efforts to improve school performance that ignore health are ill-conceived, as are health improvement efforts that ignore education.”

*Health Is Academic: A Guide to Coordinated School Health Programs.* Edited by Eva Marx, Daphne Northrop, and Susan Frelick Wooley. New York: Teachers College Press, 1998

# Health Literacy

- Health literacy: the capacity of an individual to obtain, interpret, and understand basic health information and services and the competence to use such information and services in health enhancing ways.<sup>1</sup>

1. "Report of the 1990 Joint Committee on Health Education Terminology," *Journal of Health Education*, Vol. 22, No. 2 (1991), 104.

# Health Literacy

- Deficiencies in health literacy are often related to poor health knowledge.
- Early adolescence is an ideal life stage for health education.
- The Institute of Medicine has identified schools as an important intervention setting for improving health literacy.

# Assessment

- SCASS – HEAP
- Limited large-scale assessment at local and state levels
- Increased focus on subjects other than health and physical education

# Partnership

- Ruth Lilly Health Education Center
- Indiana Department of Education
  - Coordinated School Health Program
- Indiana University
  - School of Health and Rehabilitation Sciences
  - School of Physical Education and Tourism
  - School of Medicine
    - Department of Public Health
    - Department of Pediatrics
  - Polis Center (geographical information system)
  - School of Informatics

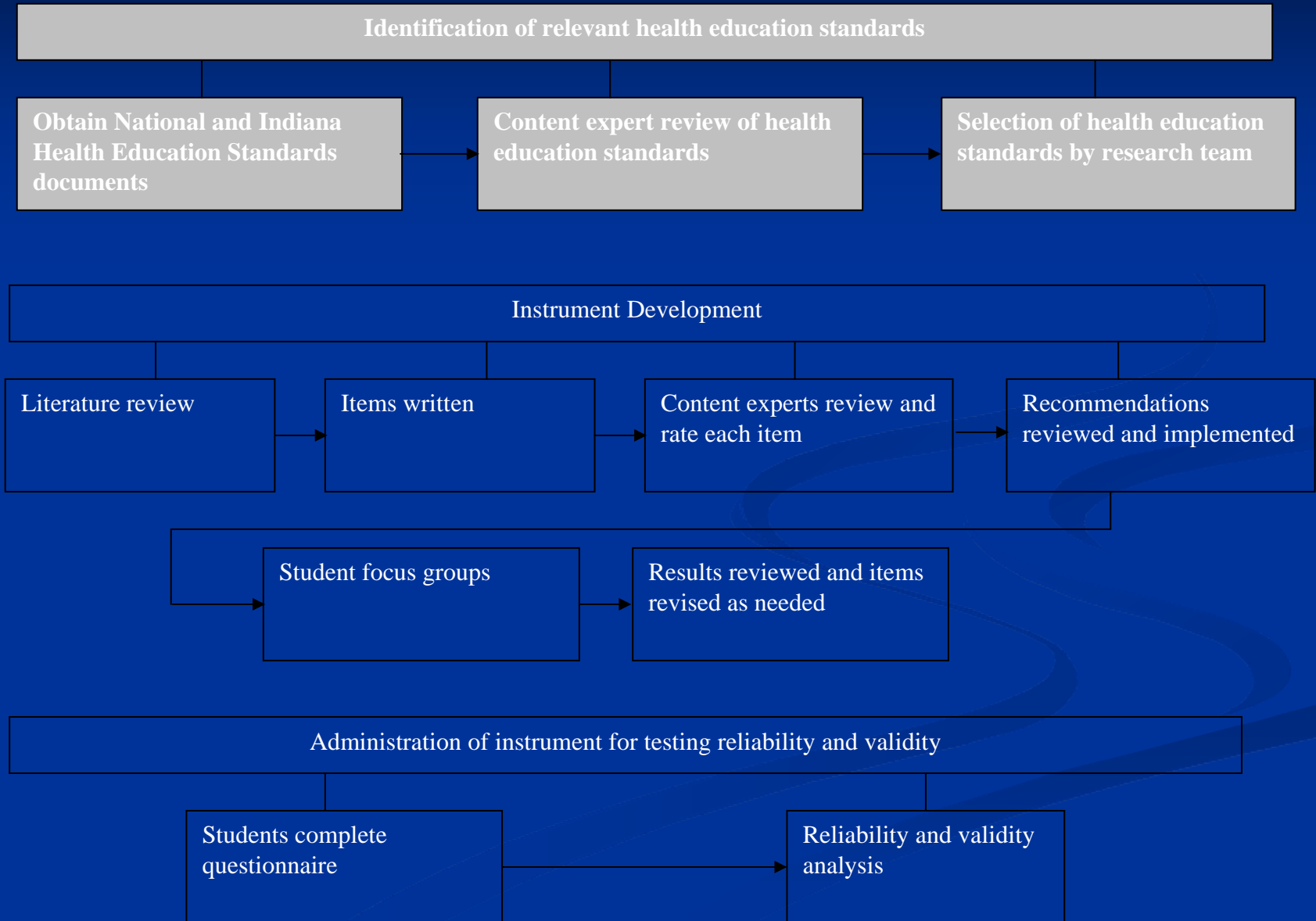
# Anticipated users of assessment data

- Classroom teachers
- State, local and/or neighborhood leaders
- Researchers
- National Association of Health Education Centers
- Communities

# Specific aims

- Construct an information management system to allow for systematic assessment of Indiana students' health knowledge
  - Develop and validate a set of questions assessing health knowledge to be administered in a digital format
- Cross-link health knowledge with other data sources pertaining to individual and contextual factors
- Obtain ongoing support for the implementation and sustainability of the project

# Overview of Development Process



# National Health Education Standards

- Describe the knowledge and skills essential to the development of health literacy.
- Indiana Academic Standards for Health Education

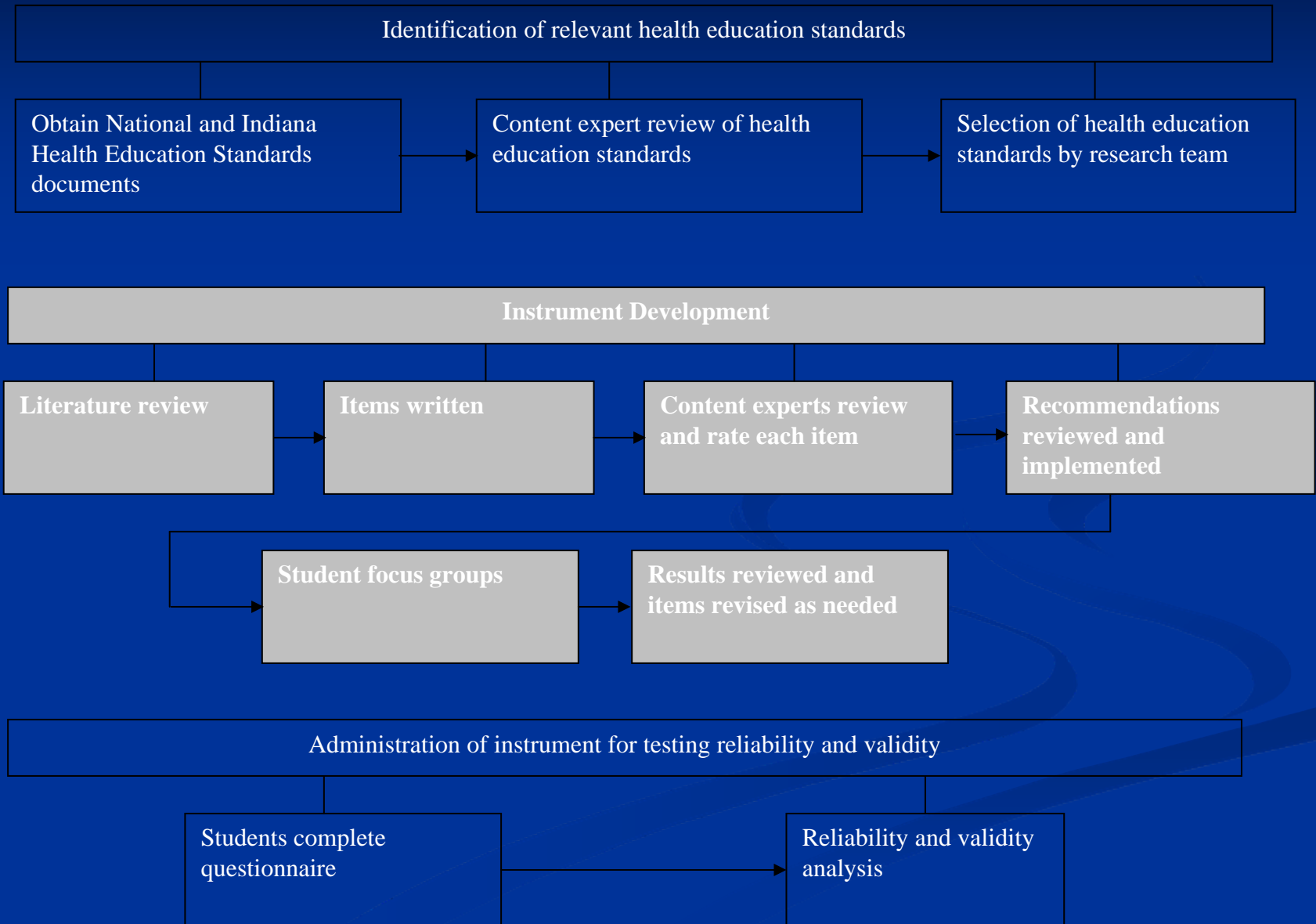
# Identification of relevant standards

- Content experts
  - 21 of 46: Health educators, PE teachers, nutritionists/dieticians
  - Four standards rated as most relevant to childhood obesity (diet & physical activity)

# Health Education Standards

- Students will demonstrate the ability to use decision-making skills to enhance health
- Students will demonstrate the ability to use interpersonal communication skills to enhance and avoid or reduce health risks
- Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce risks.
- Students achieve and maintain a health-enhancing level of physical fitness.

# Overview of Development Process



# Instrument Development

- Writing team
  - Two health education professors
  - One health education practitioner
  - One educational psychologist
- Content validity
  - 15 of 45 content experts assessed content
  - How well does each item measure identified health/physical education standard?

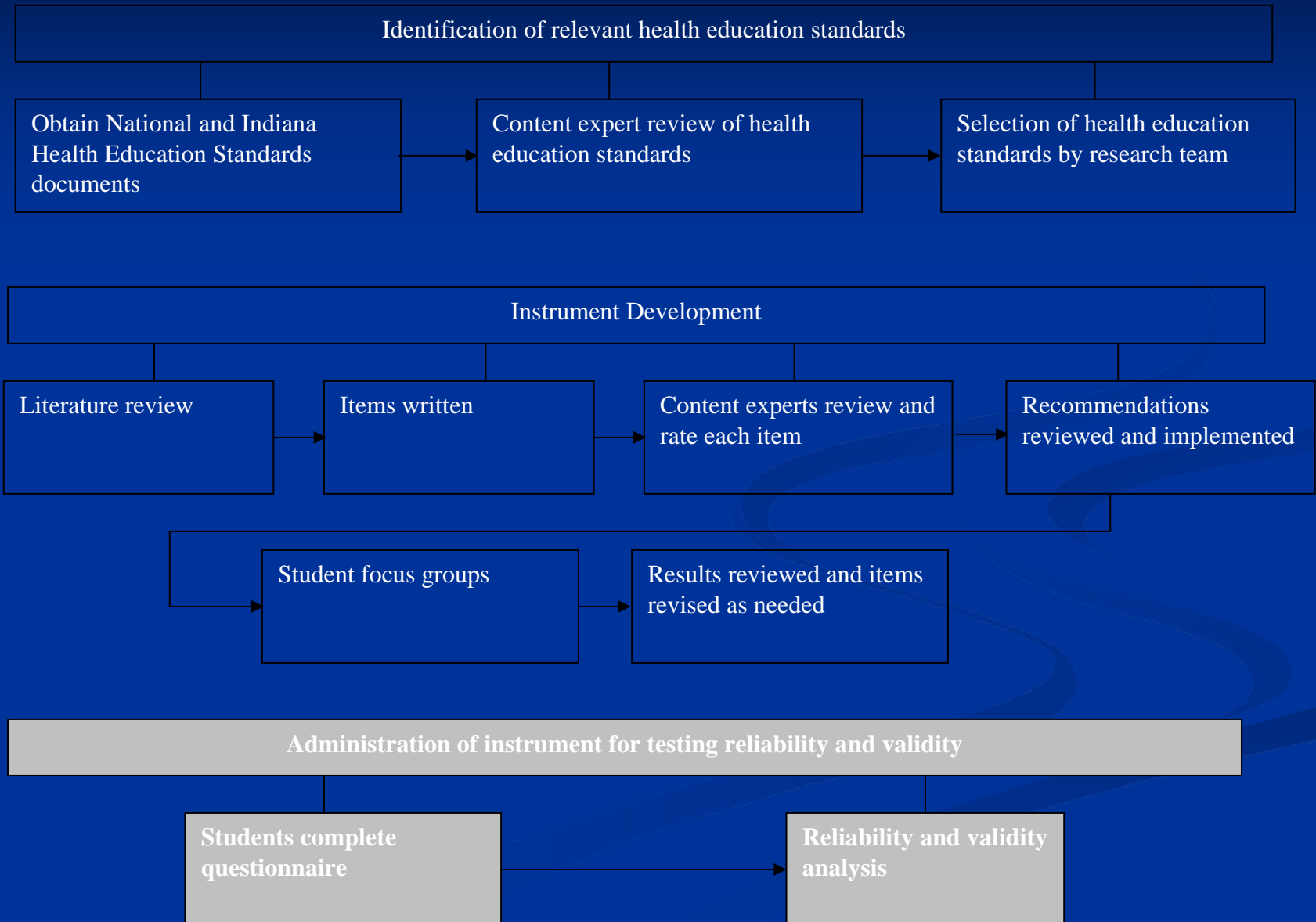
# Instrument Development

- Student focus groups
  - Two focus groups
  - Representative sample of students
  - “Think aloud” methodology
    - Comprehension
    - Readability
  - Items deleted or revised

# Instrument Development

- Two forms
  - Form A: 12 items (8 nutrition / 4 physical activity)
  - Form B: 11 items (8 nutrition / 3 physical activity)
  - Both forms: 5 health behavior items (Youth Risk Behavior Survey)
- Keypad data collection

# Overview of Development Process



# Item Analysis

## Form A

The items that were retained had an average difficulty index of .51 and average point biserial coefficient of .38.

## Form B

The items that were retained had an average difficulty index of .49 and average point biserial coefficient of .40.

These statistics suggest that the items are of average difficulty for the students who completed the test and also that the students' responses to the items are positively correlated with their total score on the test.

# Conclusion

- This study represents a first step toward creating a bank of test items designed to measure students' knowledge of the four national health and physical education standards that are relevant to diet and nutrition education.

# Future Directions

- Expand test bank
- Spanish language
- Linking health literacy to contextual factors
- Other priority areas
- Examine diffusion to other Health Education Centers and schools

“Clearly no knowledge is  
more critical than  
knowledge about health.  
Without it no other good  
can be successfully  
achieved.”

-Ernest Boyer, 1983

# Thank you

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