

Point of Care Decision Support For Undergraduate Nursing Students:



The Gerontological
Informatics
Reasoning Project
(GRIP ©)

Fran Cornelius PhD, RN
Judy Draper MSN, CRNP
Michael Dreher DNSc, RN
Il-Yeol Song, PhD
Harshad M. Pitkar, M,
Janet Manco, MSN, RN
Rick Keller MSN, RN



Background of Project

The Gerontological Reasoning Informatics Project began in the Summer of 2002 with a 3-year grant to Dr. H. Michael Dreher from the American Association of Colleges of Nursing & the John A. Hartford Foundation

Grant Title:

The **INSPIRE** Undergraduate Geriatric Nursing Education Project



Purpose of the Inspire Grant

1. Use the **INSPIRE** Modules to structure content in a new required course, **NURS 450 Contemporary Gerontological Nursing**
2. **Integrate technology with gerontology** to make geriatric nursing more high-tech and attractive to students as a career field
3. **Focus on the use of technology to deliver geriatric healthcare more efficiently**



The **INSPIRE** Project organizes geriatric nursing curriculum into 7 project modules that "**inspire**" the acronym:

intellect (I)

nutrition (N)

self-concept (S)

physical activity (P)

interpersonal functioning (I)

restful sleep (R)

and elimination (E)

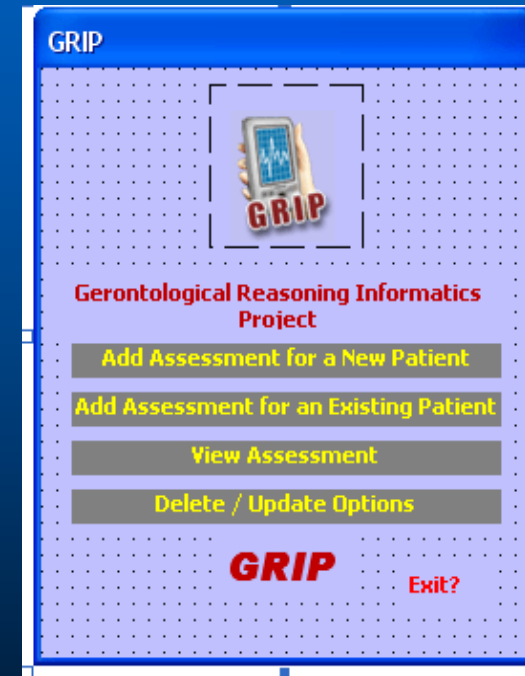


The Gerontological Reasoning Informatics Project - GRIP©

First came **INSPIRE.**

Out of **INSPIRE**, emerged

GRIP©



What is GRIP?

FIRST

GRIP© is a geriatric assessment tool software program that is digitalized for the PDA. In 20 minutes, students can use the GRIP program in clinical to replace their paper data collection tool to perform a comprehensive geriatric health assessment.



SECOND

- A digitalized program using a modified Gordon's Function Health Pattern framework to calculate priority scores for **11 separate algorithms** (i.e., sleep/rest, nutrition/metabolic, activity/exercise).
- Students enter data in the clinical area and in **real-time** the PDA immediately calculates a score for each assessment area.
- Students review all scores and use **critical thinking** to determine which areas have the **highest priority** for nursing and medical intervention.



THIRD

Once home, the student can then sync the PDA to their desktop PC and use the **desktop companion** of the GRIP software to complete their medication worksheet and appropriate care plan documents which can then be **emailed** to the clinical faculty.



INSPIRE Module/GRIP Algorithm Developers

intellect (I) – Dr. Gloria Donnelly, Dean

nutrition (N) – Dr. Lorraine Igo

self-concept (S) – Dr. Beth Gonzalez

physical activity (P) – Dr. Anne Ferrari

interpersonal functioning (I) – Professor Barbara Blair

restful sleep (R) – Dr. H. Michael Dreher

elimination (E) – Professor Judy Draper



HISTORICAL EVOLUTION OF

GRIP©

at Drexel University



Brief Overview of Project Evolution

In the **Summer of 2002** this grant bought PDAs (Palm VIIX Model) for 36 senior nursing students in their last quarter in our 11-month **Accelerated Career Entry BSN Program** for 2nd degree students

The first version of pre-**GRIP** was digitalized and loaded on to all PDAs



Year ONE:

Lessons Learned from the First Summer

- Despite being given the Palm VIIx – some used their preferred PDAs and this caused problems
- All adjunct faculty – with the exception of two – felt overwhelmed by the PDA use in the clinical area
- We discovered how important learning curves were to new technology
- We immediately revised our curriculum sequence for the following Fall after this summer experience



Year TWO: Jumping right into the fire with no fear....

- Surge in enrollment in the Fall 2002
- Nursing Informatics was moved to the 1st quarter to solve learning curve problem
- The Core GRIP Development Team secured a Drexel Synergy Grant of \$18,950 in early 2003



Second Phase

- Summer of 2003 debuted the second phase of what was now called **GRIP** and the first decision tree – the Sleep/Rest Health Pattern algorithm formed the basis for the new software program. We upgraded from the Palm to the hp wireless blue-tooth **Pocket PC**
- A PDA orientation now became part of all adjunct course orientation sessions and PDAs were purchased for loan to them



Decision Tree Example

Sleep/Rest Health Pattern

1. Are you fully satisfied with your current sleep patterns?

- Very satisfied (scored as 0)
- Moderately satisfied (scored as 1)
- Moderately dissatisfied (scored as 2) (dropdown menu)

Dropdown menu reads:

Assess reason for moderate dissatisfaction with sleep

- Do you have insomnia?
 - » Yes (score as 2)
 - » No (score as 0)
- Do you have sleep apnea?
 - » Yes (score as 5)
 - » No (score as 0)
- Do you have other sleep problem?
 - » No (score as 0)
 - » Yes (score as 2) (dropdown menu)
- **List other reason** (*in 30 characters or less*):



Year **THREE**: The seeds we planted started to germinate and sprout...

- Evaluation after summer 2003 was very positive
- Software developed by the Core **GRIP** Team continued
- Winter 2004 a more elaborate **reliability and validity testing** of each algorithm was conducted
- Summer 2004 a second round of **reliability and validity testing** was conducted.



Findings

- Student – Student Comparison
- Student – Faculty Comparison
- Faculty – Faculty Comparison
- Interview Analysis
- General Findings



Conclusions

- GRIP is effective in helping students think and construct meaning from information gathered supporting the process of gaining a new knowledge
- Handheld technology is effective in development of clinical decision-making skills in undergraduate nursing students.



Conclusions

- Students were able to identify the top 3 nursing care priorities at a level of expertise which compared favorably with faculty experts.
- Students were able to do a more comprehensive patient assessment/interview when using GRIP

Conclusions

- The PDA can be a barrier to the nurse-patient relationship
- The GRIP tool needs to be revised in design and functionality

Implications for Nursing Education

- The PDA can support situated learning by providing point-of-care/need access to relevant information essential for clinical decision-making
- Tools such as GRIP can help provide a mechanism to provide structured learning opportunities in context to support the development of higher order thinking skills among nursing students

Study Limitations

- Study time frame short (longitudinal preferable)
- Sample was not representative of nursing students
 - Volunteers may have been more technologically skilled
 - Drexel nursing students more technically skilled
- Software was new
- Students were new to the software
- Researcher



Recommendations

- Before any additional studies are conducted, a detailed examination of the data collected by the tool in this study—question-by-question—may help identify specific modifications that would improve the tool.
- Further testing to establish reliability and validity of this tool is also indicated.
- Similar studies in different settings
- Longitudinal study
- Study comparing students who use the technology and those who do not
- Study investigating the effect of technology, such as the PDA and PDA based tools, upon the nurse-patient relationship.



FUTURE GOALS FOR GRIP©

1. Secure a major grant to fund a third round of reliability and validity testing
2. Establish GRIP as a model geriatric assessment tool not just for nursing students, but for professional nurses
3. Use GRIP as a repository of geriatric data on a secured server for researchers
4. Use GRIP as a centerpiece example of how technology can be used to enhance geriatric nursing care and improve health care delivery



GRIP©

DEMONSTRATION

and
Q & A



GRIP Development Team

- H. Michael Dreher, D.N.Sc., RN
- Barbara Blair, MSN, RN, CS
- Gloria Donnelly, Ph.D. RN, FAAN, Dean
- Judy Draper, MSN, CRNP
- Anne Ferrari, Ed.D., RN
- Elizabeth W. Gonzalez, Ph.D., RN, CS
- Fran Cornelius, Ph.D., RN
- Lorraine Igo, MSN, RN., EdD
- Il-Yeol Sung, PhD – College of Information Science & Technology
- Harshad Pitkar, MS - College of Information Science & Technology



CORE GRIP DEVELOPMENT TEAM

- H. Michael Dreher, D.N.Sc., RN
- Fran Cornelius, PhD, RN
- Judy Draper, MSN, CRNP, Doctoral Student, U of Penn
- Il-Yeol Sung, PhD – College of Information Science & Technology
- Harshad Pitkar, MS - College of Information Science & Technology



Questions?

