# Sigma Theta Tau International 26th Research Congress

## CHAMBERLAIN
### College of Nursing

Symposium:

Integrating Active Learning & Innovative Teaching Strategies in a Bachelor of Science in Nursing (BSN) Degree Program to Support Success for Students & Graduates

# Exploring Creative Tinkering as a Pedagogical Instructional Methodology to Improve Success on NCLEX-RN©

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# Study Background/Relevance

- Limited knowledge related to student's performance on alternate item style questions

- Limited knowledge related to utilization of Smartboard technology and nursing education

- Studies showed practicing nurses believe alternate items, demonstrate competence better than multiple choice (Wendt & Kenny, 2009, p. 155)

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# Study Background/Relevance (Continued)

- NCLEX cost of $200 per student with an average 1st time pass rate of 2014 – 84.93% N= 68,175 , total failure – 10,226 for a total cost of 2,045,200 National Council of State Boards of Nursing, 2015

- NCSBN – Introduction of alternate format style questions

- Student focus groups demonstrated a gap in preparation for NCLEX

- Evidence based findings through trends consistent across 11 campuses

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# Literature Review

- Smartboard and education

-  Alternate items and nursing

- Creative Pedagogical Technology

# Bricolage Philosophy

- "Bricolage" French word for tinkering
- Creative use of tools and resources
- Engaging creative exploration of practices
- Swirling together influences, ideas and realizations from the mind to a "Jelled new concept"
- Exploration of new methods of teaching and learning

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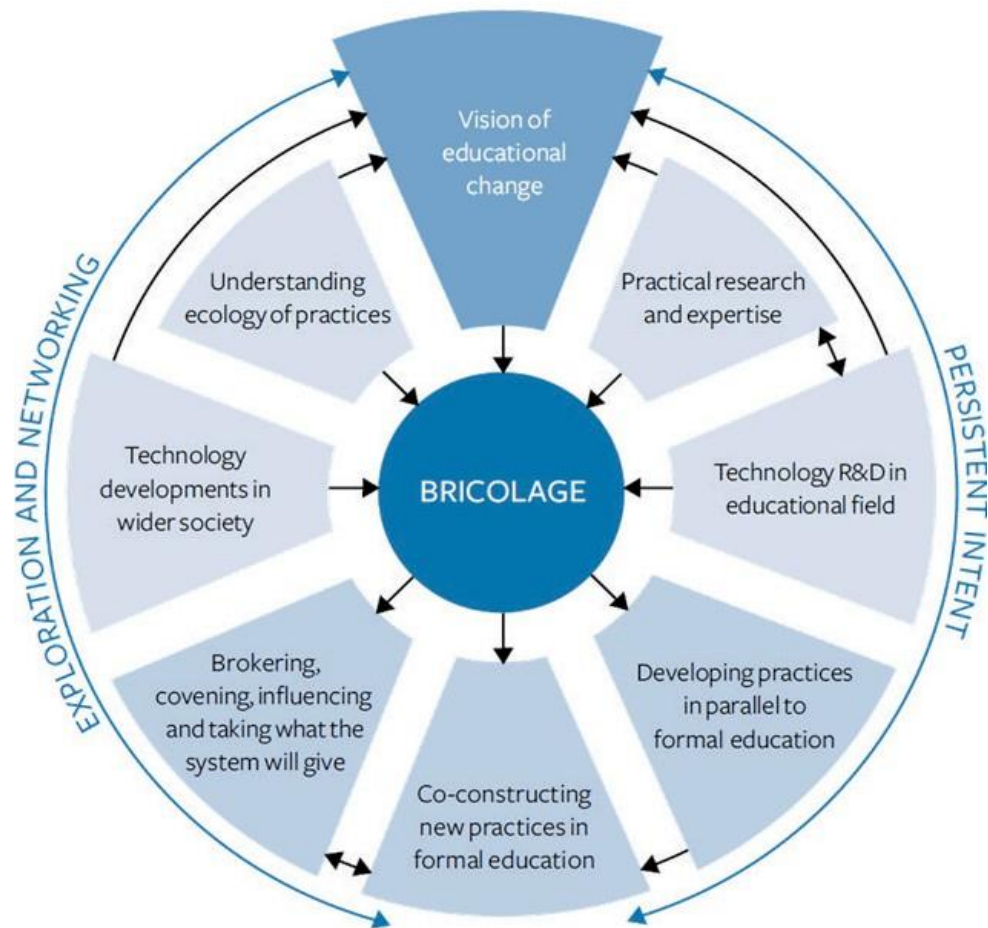
# Problem Statement

It is not known what teaching methodology would support students ability to successfully respond to alternate item format style questions?

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# Research Purpose

- Determine what teaching method might increase student performance on alternate item questions

- To gain a clearer understanding of the implications of this methodology for nurse educators

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# Research Question

- What teaching methodology might increase student performance on alternate item style questions?

- How can nurse educators respond?

# Methodology

- Exploratory method

- Retroactive data analysis of proficiency on alternate format item style questions

- 11 campuses proctored assessment N=645 junior Bachelor of Science in Nursing (BSN) degree program students

- Pre- and post-comparison of performance on alternate style questions following implementation of creative tinkering strategies using smartboard technology and training

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# Research Sample

- Purposive Sampling N=645

- Pre-determining Criteria
    - Chamberlain College of Nursing BSN student
    - Participation in proctored academic assessment

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# Data Collection

- Retroactive review of alternative item responses from 11 Chamberlain College of Nursing campuses

- Pre- and Post-Smartboard performance assessment comparison following planned creative tinkering strategies and training

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# Pre-Smartboard Education Performance



Alternate Item Performance

Overall Alternate Item Performance 11 Campuses

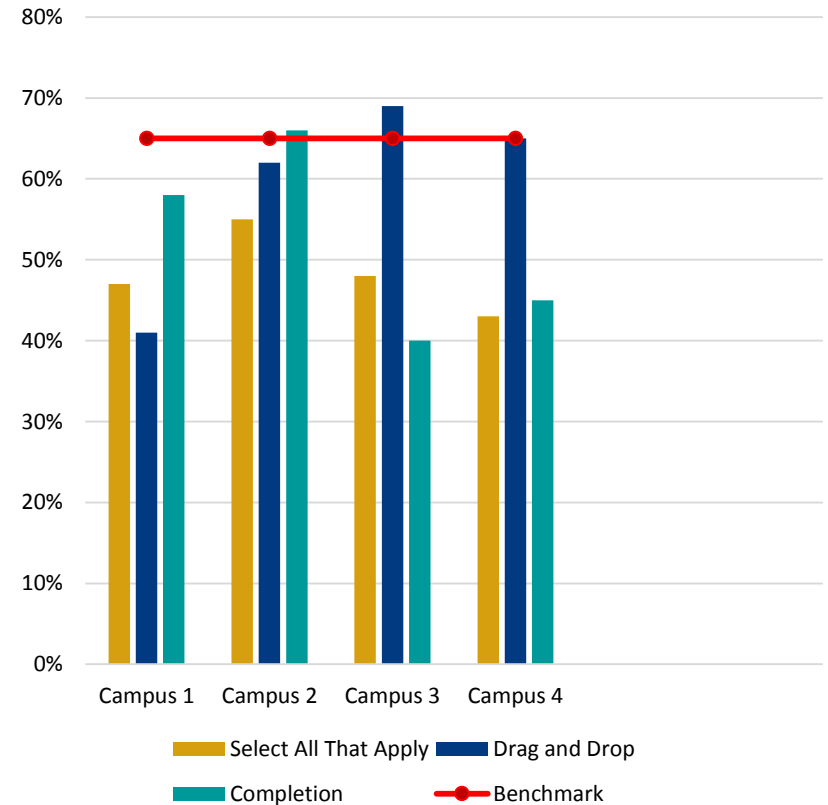■ Drag and Drop  ■ Completion  ■ Select All That Apply

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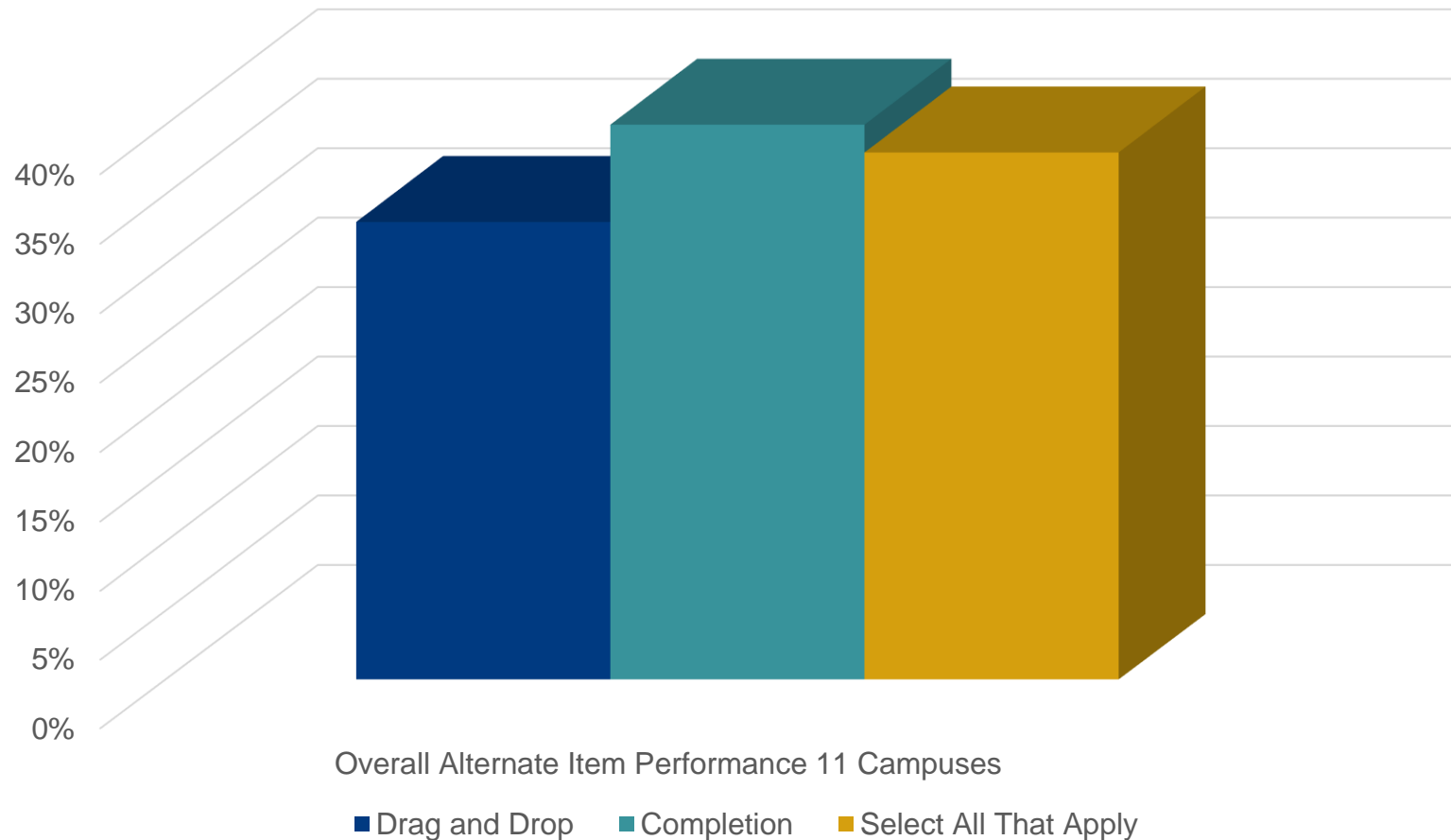
# Alternate Item Proficiency – Pre/Post



Pre – SmartBoard Education Performance

Post – SmartBoard Education Performance

Legend: Select All That Apply, Drag and Drop, Completion, Benchmark
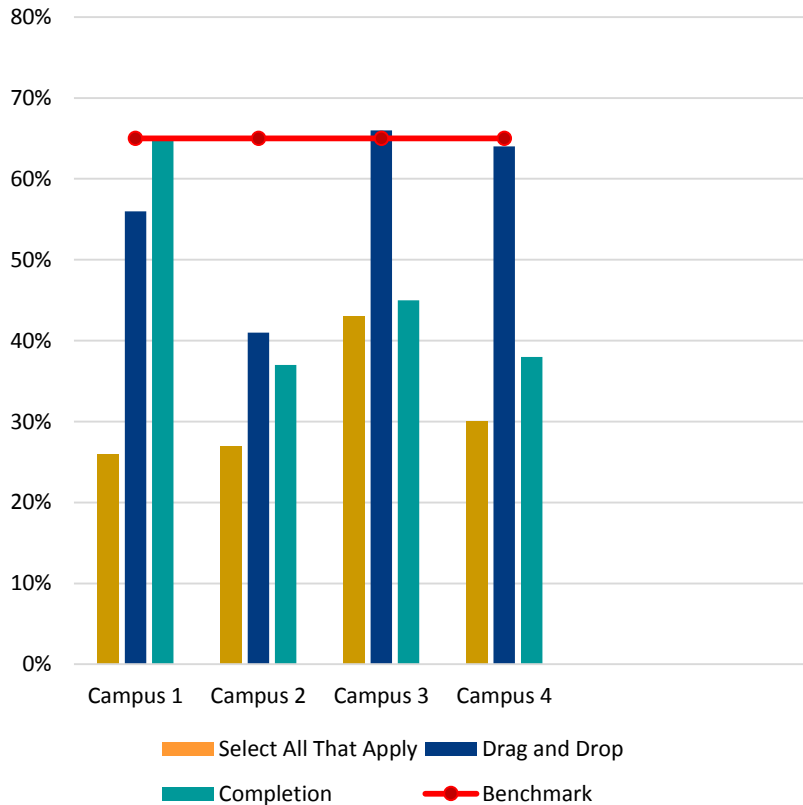
# Relationship of Research Findings to Questions Posed

1. What teaching methodology might increase student performance on alternate item style questions?
   - Creative tinkering through gaming and smartboard

2. How can nurse educators respond?
   - Connecting Concepts Bricolage Philosophy

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# Further Research

- "Must not ignore the digital divide…keeping up with digital tools that are transforming literacy instruction and student learning" (Saine, 2011)

- Building on what we found out – Trending on measure of 11 campuses, focus groups as to their comfort level, qualitative study, gaming as a pedagogical process for student learning outcomes

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# Discussion/Conclusion

- Changing in NCLEX pass rates

- Use of the methodology and how it applies to improving student outcomes and transitioning them to practice

- Enhance the research on the preparation on alternate format style questions and means to better assess students knowledge

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# Discussion/Conclusion (Continued)

- Clinical decision-making related to classroom and clinical

- Ability to answer alt format styles questions

- Improve student learning outcomes, transition to the care of high acuity patient that require a higher level of Blooms acquisition

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# Comparison of HESI Pharmacology Exam Scores Utilizing "Active Learning Classroom Techniques": In a Baccalaureate Nursing Program

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# Study Background/Relevance

- Prior to the 21st century, predominant educational approach in nursing/health professions was teacher based

- Traditional approaches utilized lectures, seminars, audiovisual and collaborative teaching

- Primary shift from traditional teaching methods to use more *active learning approaches* began with use of simulation, the OSCE (objective structural clinical examination and standardized patients)
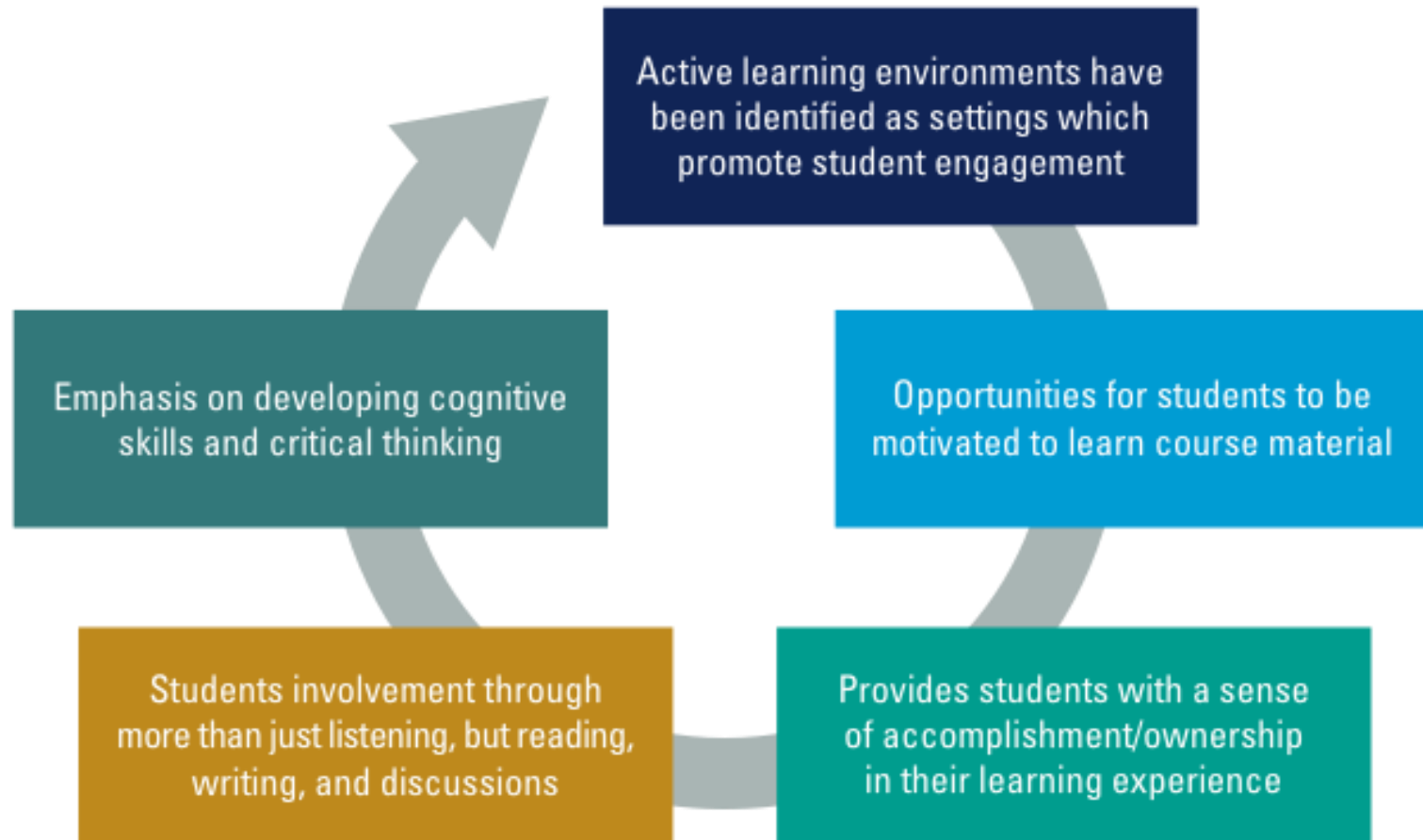
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# Study Background/Relevance

- Traditional teacher centered philosophy steered the delivery of educational content

- Transference of knowledge typically included memorization, repetition and recitation of information

- Recently educators in nursing and health professions employ student/centered methods

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# Study Background/Relevance



Active learning environments have been identified as settings which promote student engagement

Opportunities for students to be motivated to learn course material

Provides students with a sense of accomplishment/ownership in their learning experience

Students involvement through more than just listening, but reading, writing, and discussions

Emphasis on developing cognitive skills and critical thinking

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# Philosophy

- Innovative teaching pedagogy reflecting shift away from *"Sage on the Stage"* to *"Guide on the Side"* perspective

- Emergence of learning centered and concept based curricula encourages student centered learning and development of critical thinking skills among nursing students

- Transitions faculty from the traditional power-point lecture to incorporate more active learning strategies, (case study, practice questions, group work, open discussion, team based learning, games, etc.) to improve the learning experience and have positive outcomes

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# Research Studies in Pharmacology

- RN's felt unprepared to administer medications upon graduation. N=1,000 RNs found only 19% of BSN graduates felt prepared to administer medications to groups of 10 or more patients. 48% reported understanding the pharmacological implications of medication administration (Smith and Crawford's, 2003)

- Descriptive study of 352 RNs convenience sample in Nevada revealed 51% did not believe enough time for practice of pharmacology was provided in the BSN curriculum. *Recommend using active learning teaching methods to teach pharmacology.* (Candela & Bowles, 2008)

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# Research Studies in Pharmacology

- Utilized non-experimental causal comparative and correlational research design found that nurses had poor knowledge of drug mechanisms of action and interactions. Suggest increasing pharmacology education and clinical exposure to drug administration in undergraduate courses. (Nodsi and Newell, 2009)

- Evaluative study using a convenience sample of Finnish nurses and nursing students found that nurses and nursing students considered their pharmacology skills insufficient. (Niemi, Hupli, Leino-Kilpi & Puukka, 2005)

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# Research Studies in Pharmacology (Continued)

- Qualitative study of 23 nursing lecturers and found that 35% felt nursing education provided insufficient pharmacology preparation for practice, and 34% thought nursing students were unprepared for pharmacology practice. (Bullock and Manias,2002)
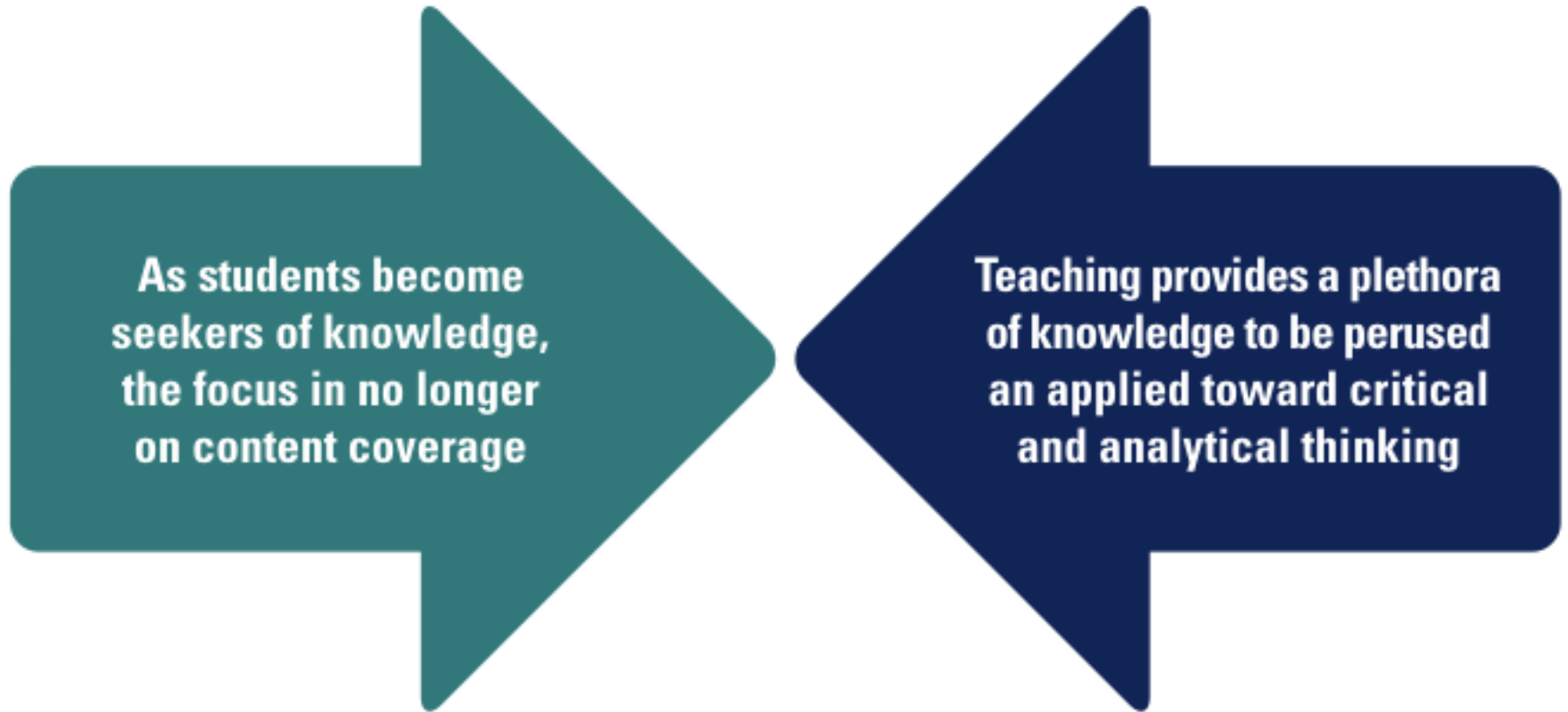
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# Problem Statement

- Mandates imposed by national organizations, and accrediting bodies have identified critical needs in changing nursing educations paradigm

- Nurse educators are constantly challenged to create learning environments that move students from passive to engaged student learners

- Teaching strategies fostering the development of critical thinking skills among nursing students transitions faculty to incorporate more *active learning strategies*

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# Active Learning

As students become seekers of knowledge, the focus in no longer on content coverage

Teaching provides a plethora of knowledge to be perused an applied toward critical and analytical thinking

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# Research Purpose

The purpose of study was to evaluate if nursing students taking a pharmacology course utilizing innovative teaching strategies in an active learning classroom environment would demonstrate increased HESI Pharmacology exam scores as compared to students who completed the pharmacology course in an online platform.

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# Research Question

Do pharmacology students engaged in innovative teaching strategies in an active learning classroom environment have higher HESI Pharmacology exam scores than those students who took the pharmacology course online?

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# Active Learning Classroom

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# Active Learning Teaching Strategies

- Small group work

- Computer managed instruction

- Reciprocal learning

- Integrated case studies

- Problem-based learning

- Open discussions

- Practice questions

- Games

- Team-based learning

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# Methodology

- Pharmacology course during the spring session (2014) after completing both sessions of pharmacology

- All the students completed this normalized computer-based pharmacology exam from a national testing company at the end of the course of which the scores were evaluated and assessed

- Standardized measurement educational outcomes data from (HESI) along with aggregate scores were examined and descriptive and inferential data was further analyzed by means of a independent t-test using Minitab 17 and Excel

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# Research Sample

- The entire research group was composed of N=39 students both traditional and online students as participants of this study

- The active learning classroom group had (N=24) students and online platform group had (N=15)

- The overall HESI outcome score of the active learning group (N=24) was compared to the online platform group (N=15) to note overall HESI score outcomes/differences

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# Results

- An independent t-test was used to compare the mean scores on the national normalized computer-based pharmacology test for the active learning group and the online platform group

- The mean score for the (active learning group (954, N=24) and (online instruction group 866, N=15) which showed a scoring difference of 88 points. See tables for descriptive and inferential statistics

- To establish Homogeneity of Variances, using Minitab 17, demonstrated significance ($p<0.046$), indicating that the variances, were statistically significant at (alpha=0.05)
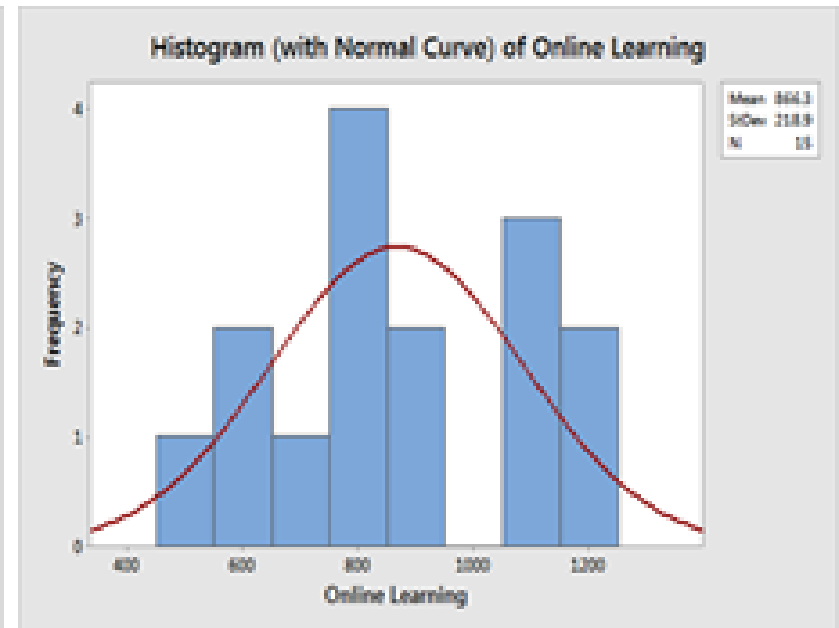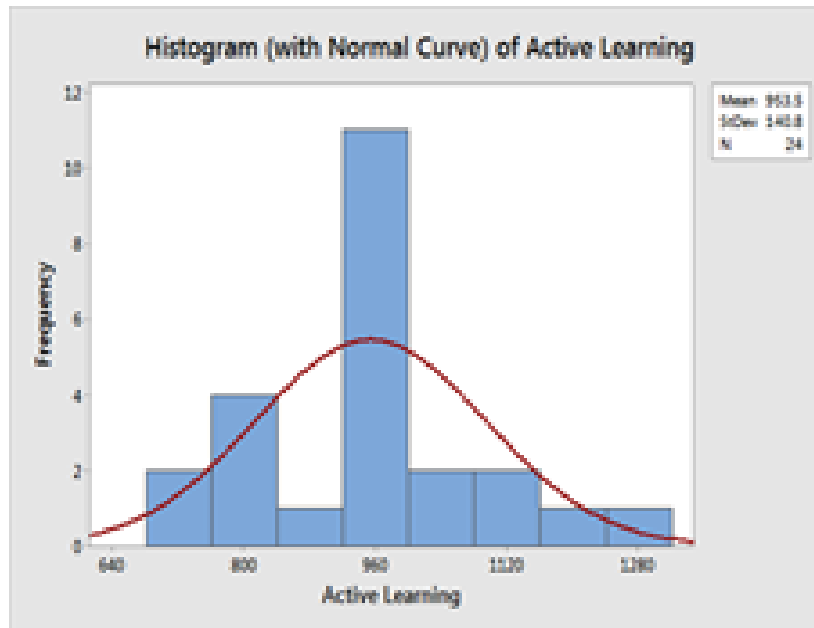
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# Comparison of Pharmacology HESI Exam Scores

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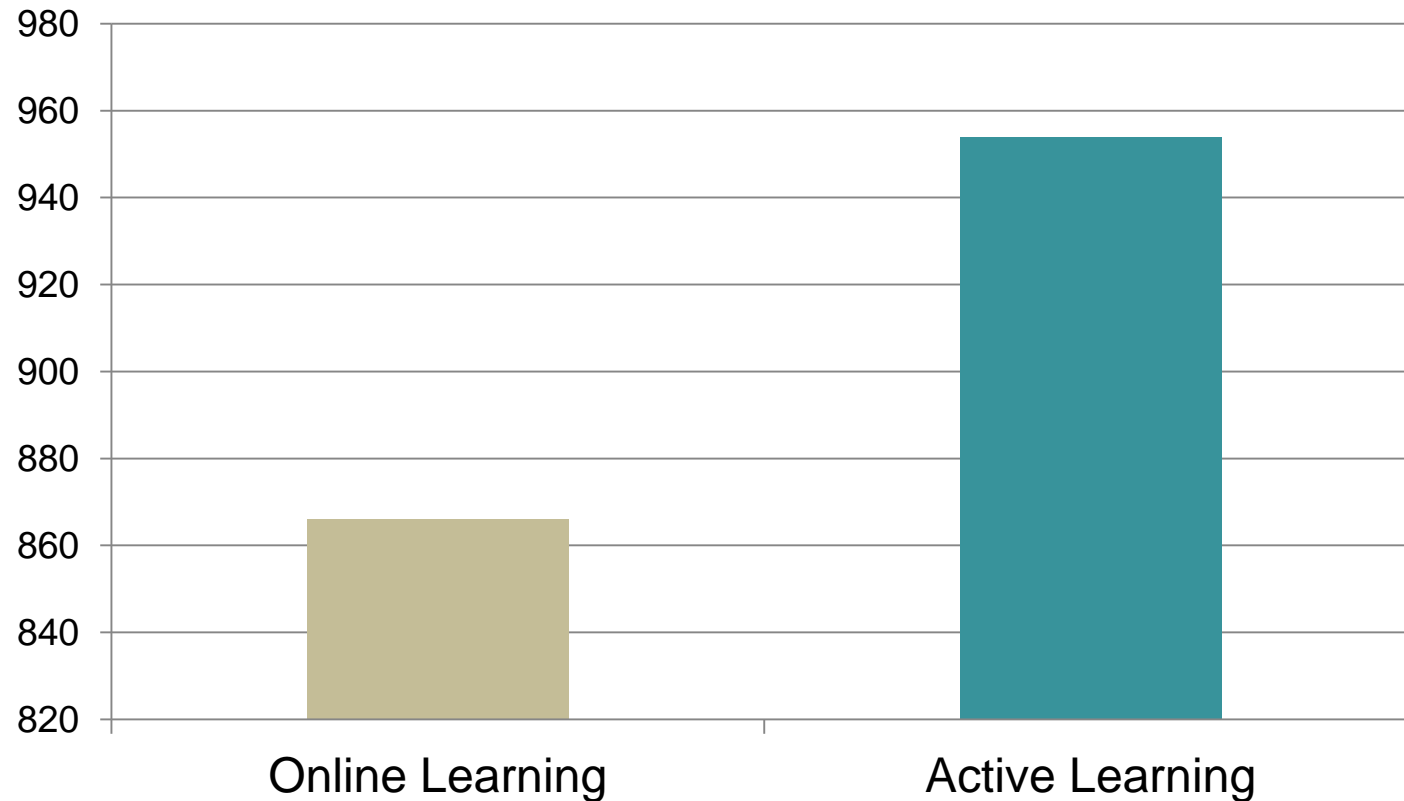
# Pharmacology HESI Scores:
# Online Learning and Active Learning
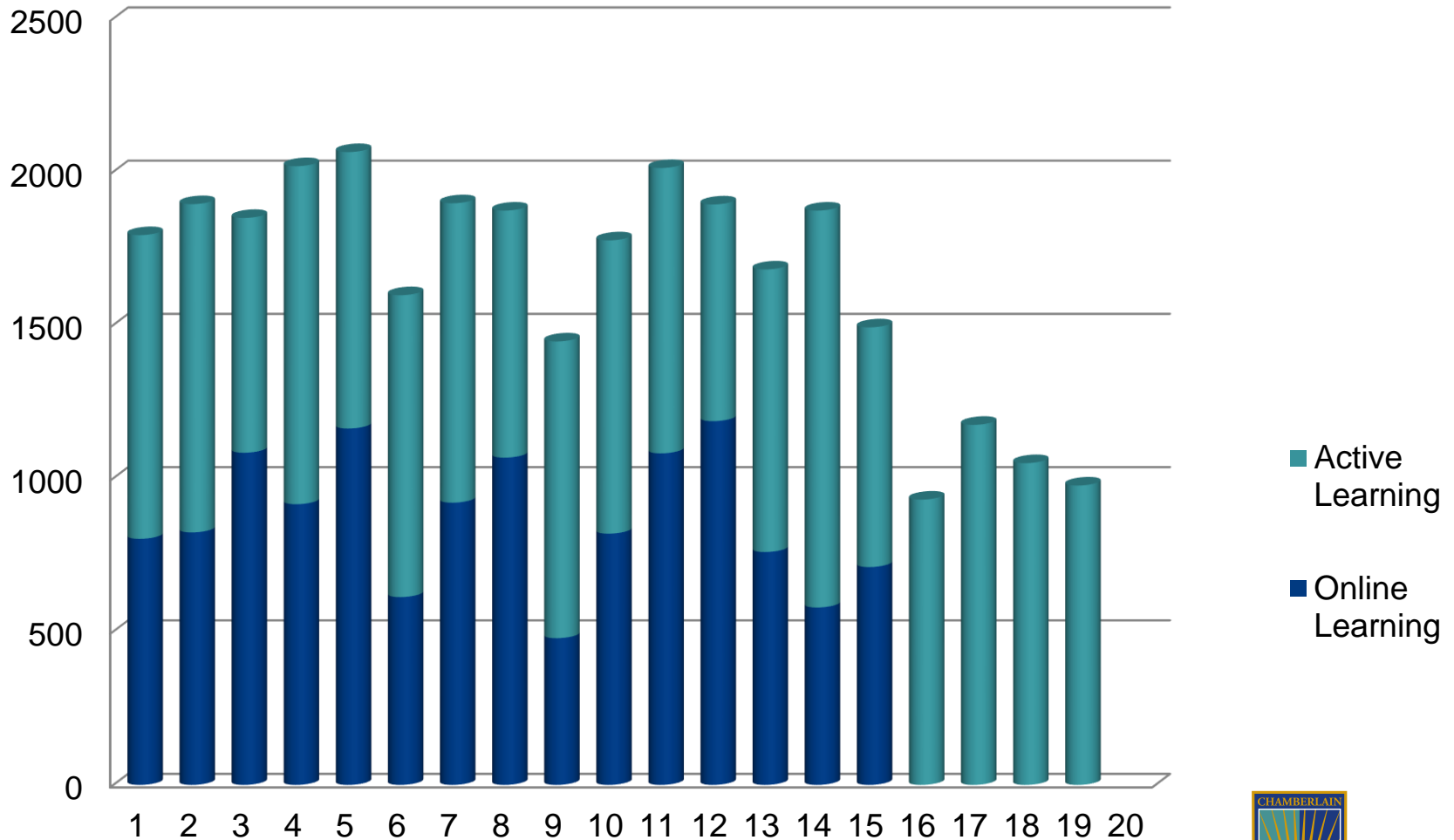
# Bell Curve of Active/Online Learning

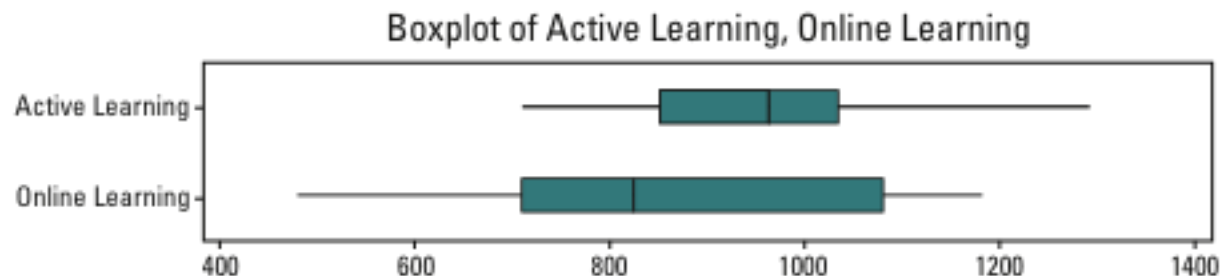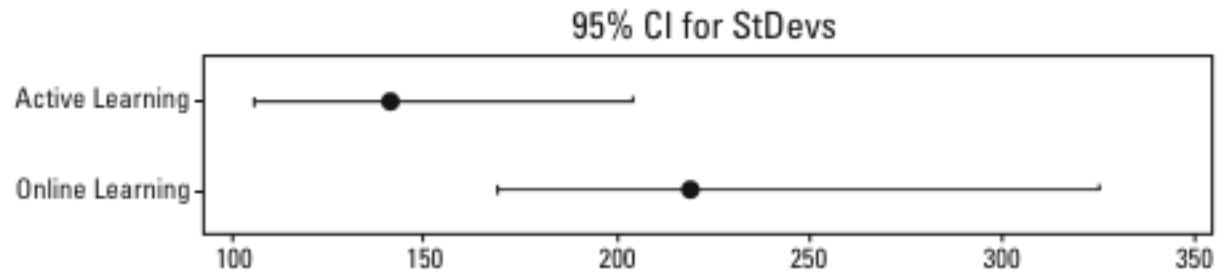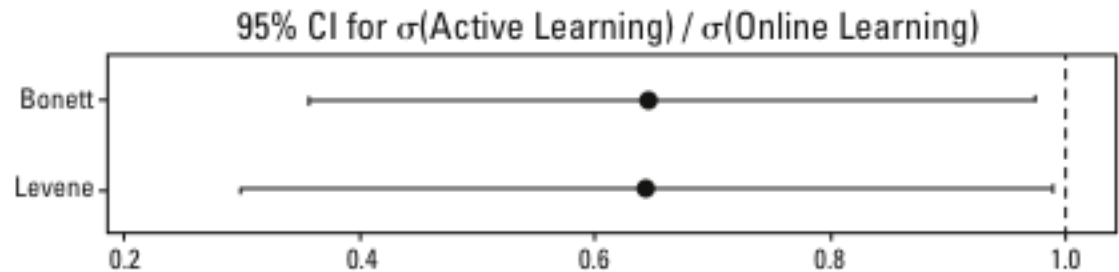# Test and CI for Two Variances: Active Learning, Online Learning

Ratio = 1 vs Ratio ≠ 1

Bonett's Test
p-Value = 0.039

Levene's Test
p-Value = 0.046

# Conclusions

- The conclusion for this study shows pharmacology students engaged in active learning teaching strategies (M=953, SD =140.76) had significant higher HESI scores than those who took the pharmacology online (M = 856, SD = 218.94), t(21 = 1.38, p< .05, d = .53)

- Summary aggregate data showed active learning group (N=24) had a range of HESI scores (707-1295) and online platform group (N=15) had a range of HESI scores (478-1186)

- Preliminary data from this study supports the use of active learning teaching strategies along with an active classroom environment to enhance student success

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# Further Research

- Small sample size cannot be generalized until future studies with larger cohort groups can be analyzed

- This study will hopefully will inspire other faculty of future courses to utilize teaching methods that will develop critical thinking, encourage ownership of learning from the students, and give new opportunities for excitement in the classroom

- Continued ongoing assessment/evaluation of future HESI scores between the two groups of pharmacology sections (traditional active learning and online platform) will need to be examined to identify future nursing education implications and considerations

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# NCLEX Olympics

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# Purpose

Lead Goal 1: Graduates who participated in the NCLEX Olympics would have a 100% first time pass rate on NCLEX

- Increase student confidence

- Reconnect with graduates waiting to take their NCLEX

- Demonstrate *Chamberlain Care* to students who have already graduated

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# HESI Exit Exam

- Reviewed HESI exit exams from students

- Identified top priorities as the percentages that were the lowest for the institutional results and had the largest gap when compared to the national results

**HESI Exit Exam**

**CHAMBERLAIN-HOUSTON-BSN**

**Exam Date: 04/11/2014 To 04/11/2014**

**Session #: 226781**

**RN Exit V-2_D**

**HESI Score: 885**

### Exam Question Results

| Item Number | Specialty Area and Topic | Institution Results | National Results |
|---|---|---|---|
| 1. | Community Hlth/Fundamentals/Geriatrics - Med Administration - Prevent med errors | 13.3% | 54.0% |
| 2. | Community Hlth/Fundamentals/Pediatrics/Professional Issues - Med Administration/Teaching - SQ injection-home care | 33.3% | 47.0% |
| 3. | Community Hlth/Medical Surgical - Musculoskeletal - Osteoporosis prevention | 93.3% | 89.0% |
| 4. | Community Hlth/Medical Surgical - Trauma/Emergency - Disaster intervention plan | 35.7% | 43.0% |
| 5. | Community Hlth/Pediatrics/Professional Issues - Leadership - Secondary prevention-school | 73.3% | 70.0% |
| 6. | Community Hlth/Professional Issues - Leadership - Assignments-UAP home care | 60.0% | 51.0% |
| 7. | Community Hlth/Professional Issues - Teaching - Teaching-strategy | 66.7% | 75.0% |
| 8. | Critical Care/Medical Surgical - Cardiovascular/GI/Hepatic - Vasopressin | 26.7% | 46.0% |
| 9. | Critical Care/Medical Surgical - Neurological/Respiratory - ICU-restlessness | 60.0% | 46.0% |
| 10. | Critical Care/Professional Issues/Medical Surgical - Legal/Ethical - Assign float-ICU | 60.0% | 50.0% |
| 11. | Fundamentals - Basic Nursing Skills - Posterior tibial pulse | 46.7% | 57.0% |
| 12. | Fundamentals - Basic Nursing Skills/Elimination - Impaction | 66.7% | 67.0% |
| 13. | Fundamentals - Basic Nursing Skills/Elimination - Ur catheter insertion | 86.7% | 77.0% |

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# Olympic Events/Stations

- Interactive and fun mini-simulations at each Olympic Event/Station based on the four highest risk categories identified from the HESI exit exam was developed

- The Houston Campus addressed:
  - Fundamentals
    - Two aspects: basic nursing and medication administration
      - Also an issue in community and maternal health concepts too

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# Olympic Events/Stations (Continued)

- – Leadership: professional concepts, autonomy, role in healthcare environment

- – Pediatrics: poisoning and concepts related to neurological dysfunction

- – General Med-Surg: specifically DM foot patho and management

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# Olympic Events (Continued)

- Nurses (faculty, lab staff, CAS) assigned to "judge" each event were provided with the mini-simulation scenarios and instructions on how to best facilitate their specific event

- The main objective was for students to work through the scenario on their own with no prompting
  - Increased prompting by the judge, indicated a need for additional information and thus, their "performance" in the event was impacted

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# "Select All That Apply" Questions

- Once the highest risk categories were identified, focused reinforcement of test taking strategies for "Select All" questions was provided
  - Students historically struggled with this format
  - One student reported that at least 1/3 of her NCLEX exam consisted of these types of questions

- One Olympic station was a computer classroom where 10 NCLEX questions that were all multiple answer questions was designed for each student

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# Select All That Apply Event/Station

- Prompting/assistance with these 10 alternate-item format questions was not allowed

- Students were given a range of stars based on their total performance

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# Day of Event: Introductions & "PUMPING" Up

- Discussed concepts and objectives for the day

- Tons of energy

- Found out NCLEX testing dates from students

- Took general questions about current NCLEX preparation

- Assigned groups and discussed rotation through stations

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# Rotation Through Olympic Events

- Students were paired together and rotated through each Event as noted in agenda

- Each rotation had a nurse "judging" the performance within the event

- At the end of each Event, the Olympic participant was awarded a number of stars based on their performance

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# Scorecard for Medals

**NCLEX Olympics Scorecard**     Student Name _____

|  | Signature of Completion | Number of Stars Earned |
|---|---|---|
| Room 140/141 – NCLEX Questions |  |  |
| Room 127 – Pediatrics |  |  |
| Room 128 – Diabetes (review) |  |  |
| Room 128 – Diabetes scenario |  |  |
| Room 134 – Leadership and Ethical Issues |  |  |
|  |  | Total: |

⭐⭐⭐⭐⭐ **5 Star Rating** = Correct answer on first attempt

⭐⭐⭐⭐ = Correct answer on second attempt

⭐⭐⭐ = Correct answer on third attempt

⭐⭐ = Correct answer on fourth attempt

⭐ = Five or more attempts to reach the correct answer

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# After the Olympic Event

- Lunch was provided

- Scorecards were tallied

- Students were provided with an NCLEX Tip Sheet during lunch

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# After the Olympic Event (Continued)

- Following lunch, Center for Academic Success staff provided practice and reinforcement of alternate-item format questions

  – Specifically focused on "select all that apply" type questions

- Each student was assigned a campus coach

- At end of day, the Olympic Medal Ceremony commenced

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# NCLEX Tip-Sheet & *Chamberlain Care*

- On the back of the tip-sheet was a space for the student to write contact information for the "Olympic" coach

- The student could reach out to this person for support and questions – additionally, each WIG member was to contact their student a minimum of once per week to offer support and encouragement

**In the Testing Room**

- The test administrator will provide you with an erasable note board that may be replaced as needed during the testing. You may not take your own note board, scratch paper or writing instruments into the exam

- You will have up to 6 hours to complete the exam: total exam times includes a short tutorial, two scheduled optional breaks, and any unscheduled breaks you may take
  - The first optional break is offered after 2 hours of testing
  - The second optional break is offered after 3.5 hours of testing
  - If you take a break, you must leave the testing room during the break
  - All personal items accessed during a break (including purses, wallets, etc.) may be inspected by the test administrator
  - You will be required to provide a palm vein scan before and after your break
  - All breaks count against testing time

**Coach to Lean-On for Support**

**Name:**

**Number:**

**Email:**

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# Faculty Evaluation

## Awesome!

- Participants were **<u>SO</u>** excited about the scenarios

  - Overall they said scenarios were very helpful

- Enlightenment about alternate item format questions – must read carefully

- Understood how much we cared about their success!

- Wanted to share all of their experiences with upcoming students

## Future Opportunities

- Allow more time at stations

- Identified need to reinforce alternate format questions in curriculum MUCH sooner

  - Change event so that students are prepared for alternate item format – software issue

- Diversify after lunch activities

- Recognizing the impact is great, and need more manpower time to continue this project

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# Changes Made from Feedback

- Increased station time

- Increased faculty facilitation of event

- Increased presentation from nurse tutors regarding alternate format questions

- More in-depth dive into HESI scores throughout the program
  - Did not rely just on exit HESI scores

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# NCLEX-RN© Results

| Graduates | Number of Gradates | Graduates Participating in the NCLEX Olympics | Of the graduates who participated in the NCLEX Olympics, number who passed NCELX on first attempt | Percentage of the graduates who participated in the NCLEX Olympics who passed NCLEX on first attempt |
|---|---|---|---|---|
| March/April 2014 | 17 | 6 | 5 | 83% |
| June/August 2014 | 29 | 15 | 11 | 73% |
| December 2014 | 44 | 32 | 17 have tested. 7 left to test who attended NCLEX Olympics | |
| May 2015 | | | | |

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# NCLEX-RN© Results

| 1st time test takers 2014 | |
|---|---|
| Total | 51 students |
| **Passed** | **41 students** |
| Failed | 10 students |

| | |
|---|---|
| **% passed in 2014** | **80.39%** |
| % failed in 2014 | 19.60% |

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# Implications to Future Practice

- Implementation of alternate format style questions throughout the curriculum

- Continue in-depth review of student feedback to modify future "Olympic" events

- Initiate feedback from faculty and colleague participants to determine what is working well and what could be improved

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