Abstract

• How are your students studying?
• Are they using the most effective means possible?
• Doing what they have always done...read the book, take the test, and move on?
• This study used a web-based survey to examine how 73 undergraduate nursing students utilize learning strategies.
• Results found students not utilizing the most effective learning strategies.
• Student’s mindsets (fixed and growth) were also examined in association with learning strategies.
Outcomes

• By the end of this presentation, the participant should be able to:
  • List at least two ineffective learning strategies
  • List two effective learning strategies
  • Compare and contrast fixed and growth mindsets
  • Identify why the growth mindset model may be more beneficial for learning

Review of the Literature

• Little is known about how students learn
• Many not so effective methods (Brown, 2014)
  • Not reading the textbook
  • Memorization
  • Not reviewing Content (Remediation)
  • Studying the night before (cramming)

• We do know students need to be shown effective study habits (Brown, 2014)
Review of the Literature

• There are many effective ways to learn (Brown, 2014)
  • Reading the textbook
  • Studying for understanding (not memorizing)
  • Space out study times (not cramming)
  • Remediation
  • Study in groups
  • Seek out peers and professors

Mindsets and Learning

• Thirty Years of research
• We do know that fixed mindsets fear failure, avoid mistakes, and do not remediate (Dweck, 2016).
• Growth mindsets do remediate, using errors as opportunities for learning.

Less is known about mindset proclivity and learning in nursing students.
What are Fixed and Growth Mindsets?

<table>
<thead>
<tr>
<th></th>
<th>Fixed Mindsets</th>
<th>Growth Mindsets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence</td>
<td>Innate</td>
<td>Malleable</td>
</tr>
<tr>
<td>Goals</td>
<td>Performance</td>
<td>Multiple</td>
</tr>
<tr>
<td></td>
<td>Avoidance</td>
<td>Learning</td>
</tr>
<tr>
<td>Effort</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Competence</td>
<td>Display</td>
<td>Development</td>
</tr>
<tr>
<td></td>
<td>Normatively Appraised</td>
<td>Mastery</td>
</tr>
<tr>
<td>Attributions</td>
<td>Girls cannot do math</td>
<td>I have not learned</td>
</tr>
<tr>
<td></td>
<td>The teacher did not...</td>
<td>that yet</td>
</tr>
<tr>
<td>Remediation</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Methods

• With IRB approval, a web-based survey was sent to 300 full time undergraduate nursing students to assess mindsets and learning strategies.
• The new **Williams Inventory of Learning Strategies** (WILS) was introduced and utilized in this study.
• The WILS has four subscales: reliability

  **Dweck’s Mindset Assessment** ($\alpha = 95\%$)
  - Low scores (3-9) Growth Mindset
  - High scores (12-18) Fixed Mindset

  **Willingness to remediation and review**
  - (13 items $\alpha=0.806$)

  **Fear of failure and avoidance**
  - (10 items $\alpha=0.664$)

  **Learning strategies (inventory)**
  - (13 items $\alpha=0.667$)

Results

• 73 students responded (24%).
• Female (93%) high school graduates.
• Mean age was 23 years.
• Academically strong:
  • GPA 3.1-3.5 (49%) and 3.6-4.0 (43%)
Q1 What year are you in nursing school?

- Sophomores (21%)
- Juniors (33%)
- Seniors (25%)

Q5 Highest Level of Education attained?

- High school diploma
- Associate degree
- Nursing school diploma (RN)
- Licensed practical nurse
- Bachelor's
- Master's
- Doctorate
If you leave here with anything today...

- **No! 52% said no one taught them how to learn!**
- Confirmed in 4 different studies

### Q6 Has anyone taught you how to learn?

<table>
<thead>
<tr>
<th></th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>4%</td>
<td>14%</td>
<td>21%</td>
<td>21%</td>
<td>23%</td>
<td>18%</td>
<td>18%</td>
<td>6%</td>
<td>7%</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>No</td>
<td>52%</td>
<td>21%</td>
<td>21%</td>
<td>18%</td>
<td>18%</td>
<td>18%</td>
<td>11%</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

### Q27 Read the textbook

- 1% Never
- 21% Sometimes
- 23% 50% of the time
- 18% Frequently
- 18% Always

Are they reading the textbooks?
Regular Spaced Time for Study (not cram)

Never or rarely true of me
Sometimes true of me
True of me about half the time
Frequently true of me
Always or almost always true of me

Regularly study over the week (i.e. not cram)

Never
Always

Looking smart?
Are they reading the textbook? How do we avoid memorization as a successful test strategy?

To whom do they go for remediation and review?
Not review and Hope for the Best

Q16 I will not review and simply move on, hoping to do better on the next exam.

- **Never**: 56.92%
- **Always**: 29.22%
- **Slightly Likely**: 12.77%
- **Somewhat Likely**: 3.08%
- **Very Likely**: No label

Need to look smart can lead to negative behaviors like exaggeration & inflation.
Under the Hood:
A look closer at Mindsets and Learning

Remediation and the Brain
Remediation

χ² = 10.93(3), p = 0.012

- 50% of cells < 5

r = 0.37, p = 0.005 (collapsed)

Not at all likely

Extremely Likely

Growth Mindsets largely disagreed with this practice
χ² = 0.334 (2) p = 0.846
Mindsets and Mistakes

X^2 = 18.280 (2), p = 0.001

Quiz One Another

X^2 = 9.660 (4), p = 0.047

* 25% of cells with <5
When Confused Seek out my Peers

\[ \chi^2 = 5.667 \ (1), \ p = 0.017 \]
\[ \rho / r = -0.33 \]

*(inverse)*

As scores increased towards FM, less peer assistance
As scores decreased to GM, increased peer assistance.

**Growth mindsets review with peers**

Teach Another Peer

\[ \chi^2 = 1.695 \ (1), \ p = 0.193 \]
\[ r = -0.4 \ (\text{inverse}) \]

*25% of cells with <5*
Implications

- It does seem from this small study that **Fixed Mindset** students:
  - Might well **embellish their scores** to appear smarter
  - **Not remediate** and **Hope for the Best**
  - **Avoid making mistakes** at the expense of learning from them
  - Destined to make the same errors over and over

---

Implications

- It would appear from this study that **Growth Mindset** students:
  - Were more **willing to make errors** and learn from them
  - **Remediate** and review
  - Quiz each other
  - **Seek out peers** to learn
  - **Teach one another** to learn better
  - Be social learners
Limitations

• Survey and social bias
• Non-response bias
  • Many people who did not answer could have been FMs and or GMs

Post Test

• List at least two ineffective learning strategies

List two effective learning strategies

Compare and contrast fixed and growth mindsets

Identify why the growth mindset model may be more beneficial for learning
Your Thoughts?

A Word from my Favorite Teacher

It is better to know how to learn than to know.

-Dr. Seuss
Thanks for Coming

• Cheryl Williams PhD RN CNE NP-C
• cwilliams2@salemstate.edu
• Twitter: cwilliamsSSU
• Blog: # growthmindsetnurse
• Web: https://growthmindsetnurse.com

References


References


<table>
<thead>
<tr>
<th>Participants</th>
<th>Theoretical Foundation</th>
<th>Study Design and Intervention</th>
<th>Findings</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>67 university students</td>
<td>Researchers examined progressive challenge and adversity between Fixed Mindsets (FM) and Growth Mindsets (GM)</td>
<td>Intervention: Students completed a mindset survey. Then they were randomly assigned to read an either incoherent or coherent article and asked take a brief multiple choice exam</td>
<td>As reading assignments became more complex (incoherent), FM students reported lowered comprehension. GM students, upon reading challenge reported higher levels of comprehension than the FM</td>
<td>FMs fear failure and resisted complexity. GMs increased reading comprehension and read more challenging material</td>
</tr>
</tbody>
</table>

| Nearly 1000 undergraduate students | Examined students’ beliefs of the math environment as either fixed or growth, their SOB to the math classroom, presence of gender stereotyping in classroom and math interest | Students were asked to complete a series of surveys There was no specific GMI | Students who perceived math classroom as fixed and highly gender stereotypical reported less interest in math and decreased SOB in the math classroom Students who perceived the classroom less fixed, even in a highly stereotypical environment, had increased SOB to the math classroom A SOB to math mitigated both the fixed/malleable classroom perceptions and stereotype perceptions on both women’s intention to pursue math in the future and their math grades. | A GM may mitigate gender stereotyping for women in math Creating a sense of belonging to a math classroom is important since it ameliorated both mindset milieus A sense of belonging may be necessary for women to continue to succeed in math |


<p>| 233 undergraduate students | Researchers studied the effects of video gaming and mindset proclivity Students completed surveys determining their mindset (FM/GM) then played a video game and were monitored for: performance time, experience, and responses to feedback during play | Results suggested that FM players lost attention to the game with mistakes, GM players’ attention was not affected by mistakes. Possible that FM participants treated mistakes as signs of incompetence, and self-handicapped loses as lack of attention not lack of ability | GM students were more likely to accept more challenging assignments and pay attention to feedback (remediate) than FMs |</p>
<table>
<thead>
<tr>
<th>Participants</th>
<th>Theoretical Foundation</th>
<th>Study Design and Intervention</th>
<th>Findings</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>168 female under-graduates at UNC in North Carolina USA</td>
<td>Researchers, in response to gender stereotyping of women and math, examined females perceptions of math aptitude and mindsets</td>
<td>Non-interventional No GMI</td>
<td>Women who believed their math skills were fixed and immutable showed less math identification and less interest in math tasks than women who believed their math skills were malleable.</td>
<td>GM can mitigate gender stereotype and increase interest in math in women. Women who perceived math aptitude as fixed became vulnerable and expressed less likelihood to pursue math in the future.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participants</th>
<th>Theoretical Foundation</th>
<th>Study Design and Intervention</th>
<th>Findings</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>377 undergraduate engineering students</td>
<td>Researchers examined ITOI in engineering students and any correlations with grades, approaches to learning, and collaboration</td>
<td>Non-interventional Assessed students ITOI as well as course grades, self-efficacy, knowledge building (deep processing) and collaborative tendencies</td>
<td>FMs expressed less engagement and collaboration while GMs were more engaging in knowledge building (deep processing) and collaboration. GM students participated more than FM in active learning and collaboration which was correlated with course grades. However, ITOI, did not predict self-efficacy or course grades.</td>
<td>Knowledge building and collaboration are key components that lead to academic achievement and in this study, GMs engaged in these practices more than FMs. FMs, which did not engage or collaborate, make a dynamic learning community difficult to build leading to less of an educative experience for all students.</td>
</tr>
<tr>
<td>Participants</td>
<td>Theoretical Foundation</td>
<td>Study Design and Intervention</td>
<td>Findings</td>
<td>Implications</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>-------------------------------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td><strong>44 college students</strong></td>
<td>Investigated how ITOI (mindsets) related to cognitive control</td>
<td>Students completed a ITOI survey and fitted to an EEG cap. They were randomly assigned to read either an article about intelligence as a fixed or growth mindset. An EEG recorded their responses to a series of cognitive control exercises</td>
<td>FMs were more concerned about error outcomes and less attention was drawn to adaptive performance. GM belief promoted adaptive brain-behavior.</td>
<td>Changes in attention and error-processing accompanied perceptions about intelligence and ability and may explain how mindset messages influenced performance and remediation.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Participants</th>
<th>Theoretical Foundation</th>
<th>Study Design and Intervention</th>
<th>Findings</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>388 undergraduates</strong></td>
<td>Examined how implicit theories of intelligence (mindsets) mediated mental health in college students</td>
<td>Non-interventional. Students were asked to complete a battery of surveys which measured theory of intelligence, anxiety, worry, mood, among other factors</td>
<td>FMs experienced more mental health issues and were more likely to suppress emotions. GMs were more likely to report fewer mental health symptoms, use cognitive reappraisal more and more likely to choose individual therapy versus medication.</td>
<td>Mental health issues present challenges as students transition through school and develop professionally. GM students report less mental health issues and transitioned more successfully contributing to academic achievement.</td>
</tr>
</tbody>
</table>
