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# A comparison of the effectiveness of two educational interventions developed to teach early infant hunger cues to junior level nursing students.

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A comparison of the effectiveness of two educational interventions developed to teach early infant hunger cues to junior level nursing students.

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### Abstract

Due to multiple learning styles, it can be difficult to teach to large groups of students. The purpose of this study is to compare the effectiveness of two different educational interventions designed to teach infant hunger cues to undergraduate nursing students to increase the knowledge and confidence levels needed for the future teaching of infant hunger cues to new parents. Flemings VARK theory was used to guide this quasi-experimental study. A pretest posttest two-group design was used to evaluate both knowledge and confidence levels in the participants (N= 86). Data was analyzed utilizing a paired t-test. The results noted significant improvements in confidence levels when comparing pre and post test scores, resulting in a difference in the mean between video and handout of 1.47 ( $t = 3.128$ ,  $p = .002$ ). The results of the knowledge data shows an improvement with both interventions, however the t-test results failed to show significance, with a mean difference of 1.365 ( $t = 1.63$ ,  $p = 0.107$ ). Therefore it can be said that multimodal teaching can improve confidence levels, but the knowledge results revealed there is no evidence to support or reject the hypothesis that the video would significantly increase knowledge.

*Keywords:* Learning styles, discharge teaching, still image, video, undergraduate nursing students, and infant hunger cues.

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Nurses are responsible for all discharge teaching to postpartum mothers (Wagner, Bear, and Sander, 2009), so it is important that student nurses learn and understand the complex concept of infant care, such as hunger cues, so they can teach new parents. Teaching patients can be anxiety producing when students do not have confidence or a clear understanding of concepts they are to teach the patient. So how do we prepare students who have little or no parenting experience about infant care?

The purpose of this study is to examine the effectiveness of two different educational interventions involved in teaching infant hunger cues to junior level nursing students. These interventions will be developed based on the use of the VARK guide to learning styles. A quasi-experimental, pretest posttest, two group design will be used to evaluate the effectiveness of different educational interventions on junior level nursing students enrolled in Nursing of the Childbearing Family at The University of Akron, School of Nursing. Data, collected along with consent, will be analyzed utilizing a paired t-test. Descriptive statistics will be run to describe the demographics of the participants. The potential benefit of this study would be to increase the student's knowledge base and confidence so they are able to effectively pass this information on to their future patients.

## **Review of Literature**

### **Discussion on infant hunger cues**

Information such as infant hunger cues can be very difficult to understand. There are multiple levels of hunger cues in infants. Early hunger cues can consist of stirring, mouth opening, turning head, and seeking/rooting. Mid level hunger cues can be seen as stretching, increasing physical movement, and hand to mouth. Late level hunger cues can include crying, agitated body movements, and color turning red (Baby Friendly, 2009). Gross et al. (2010) concluded in their study that teaching parents the importance of improving the responsiveness to infant hunger cues may help reduce the rate of childhood obesity. Reyna, Pickler, and Thompson (2006) also concluded that educating new parents is important and can help to reduce parental stress levels when it comes to their concerns about properly feeding their new infant. Wardle, De Domenico, and Li Ming, (2014) supported this conclusion with their own study that states, that educating new mothers about hunger cues is important because each feeding will be different depending on the baby's current needs. Another study conducted by Iwinski and Gotsch (2003), showed the importance and benefits of feeding by using hunger cues instead of a by the clock method of feeding. They concluded that this feeding method will not only create happier more secure babies but that the benefits should continue through life, with a mother child bond that is built on a mutual trust.

However, recognizing these cues after only reading a definition can be difficult to comprehend, let alone leave a student nurse with enough confidence to competently teach this information to new parents. To teach this information effectively, educators must be able to breach many barriers, such as a student's lack of experience with childcare, age and gender difference in students, preferred learning styles, as well as cultural and ethnic differences.

### **Student readiness for patient teaching**

There is a lack of literature available pertaining to student confidence levels in clinical areas where discharge teaching is necessary. Postpartum/discharge teaching is of high importance and concern for most patients, and the quality of these teachings can be predictive of readiness of discharge, and post discharge coping difficulties (Malagon-Maldonado, Hiner, and Lanciers, (2015). A study conducted by Wagner, et al, (2009) showed that nursing students had increased confidence levels regarding discharge teaching due to the use of multiple teaching methods such as lectures involving power points and vocal presentations, as well as enhanced simulation experiences offering hands on experience before entering the clinical area. This approach to education benefited the mothers, receiving the education offered by the students, and the staff nurses appreciated students that came to the floors prepared to teach their patients.

As research conducted by Wagner, et al. (2011) shows, patient satisfaction is widely varied and can be affected by many different variables. Patient satisfaction maybe linked to how they learn, just like nursing students. For example if a printed brochure with educational information is offered to someone who does not learn well from reading, that patient is not going to feel as if they know or understand the information well enough to implement it into their life.

### **Learning Style**

Teaching large classes of diverse individuals can be extremely difficult. Educators are always looking for ways to improve their teaching methods in order to impart the maximum amount of knowledge on the maximum number of students. Teaching nursing students can prove to be exceptionally hard due to the difficult and important knowledge that needs to be conveyed. Not only do the nursing students need to understand the material being taught, but they also need to be able to take that new information and teach it to their patients when the students move on to

the clinical areas.

There have been many studies conducted to explore the effectiveness of utilizing multimodal teaching as well as the utilization of preferred learning styles. Dobson (2010) performed a study comparing learning style preference with the students' sex and course performance and found that learning is very individualistic, and people learn better when information is presented in their preferred learning style. Another study by Sinha, Naik, Jadeja, and Patel (2012), explored the difference in medical student's learning preference based on gender. Their findings show that there is a significant difference in learning style preferences between males and females. The information gathered from these studies can be used by educators to help determine the best way to teach nursing students and increase the level of confidence in their ability to teach patients. Terregrossa, Englander, Zhaobo, and Wielkopolski, (2012) note that by utilizing multiple teaching methods that correspond to students different learning styles the results have a positive correlation on student achievement. The evidence presented supports the utilization of multiple learning methods so that both students and parents, can benefit by improving both knowledge and confidence.

Not all studies that are out there are supportive of multimodal teaching. One study by Guan (2009) indicates that there are limitations to the amount of information a brain can compile at one time, and that using multiple modalities can have a negative effect in some cases. Guan states "When visuals are combined with text presented visually, learning is impaired because learners have to split their attention between text and visuals, in order to integrate both sources of information"(2009, pg. 62). Knowing this information will help to direct this study away from combining visual text along with other visuals such as the video images.

### **Theoretical Framework**

Neil Fleming, though not the first to study learning modalities, has put together a system that is widely used in many educational institutions to help students and teachers better understand the way they learn (Vark, 2015).

VARC is an acronym that represents the different modalities of learning. This can be most simply broken down as follows; V= Visual learning, this learning preference includes the depiction of information in maps, spider diagrams, charts, graphs, flow charts, labeled diagrams, and all the devices that people use to represent what could have been presented in words. It does not however include still pictures or photographs of reality, movies, videos or PowerPoint (Vark, 2015). A= Aural/auditory, This learning preference includes information that can be heard or spoken, this type of information is best presented in the form of lectures, group discussions, radio, phone, speaking, web chat and talking through the information. People with this preference often need to actually speak the information themselves in order to learn it (Vark, 2015). R= Read/write, This learning preference is based on text forms of information reading as an input source of information as well as writing as a means for output of information. People with this preference learn best from the use of PowerPoint, Internet, textbooks, and words (Vark, 2015). K= Kinesthetic this preference can be defined as “perceptual preference related to the use of experience and practice (simulated or real)(Vark, 2015).” People with this preference tend to learn best through personal experience, examples, practice or simulation. The use of demonstrations, simulations, videos and movies of real things, will help this individual process and learn information better. By using concrete information that can be grasped, held, tasted or touched is going to improve their experience (Vark, 2015).

Most individuals will associate a preference for a particular modality or learning style, however most people are actually multimodal. There are no hard and fast boundaries when you look at modalities, and so, even if they don't know most people are learning in ways they didn't think they were (Vark, 2015). By implementing different forms of multimodal teaching methods into the classrooms educators should be able to increase levels of knowledge as well as levels of confidence within their students.

## **Methods**

### **Design**

This research was conducted as a quantitative quasi-experimental study that utilized a pretest-posttest design to compare two types of educational intervention when teaching infant hunger cues to students. All students received information concerning infant hunger cues, however each group received the information presented in two different formats. One group received written/photographic information concerning the education of infant hunger cues. The second group was presented with a three-minute video containing both audio and visual components to teach infant hunger cues. Due to the nature of the study and that the research was conducted in an established and commonly accepted educational settings, and involves normal educational practices, an exemption from the University of Akron Institutional Review Board (IRB) was obtained. After receiving the exemption from the review board the investigator was able to continue with the experiment.

### **Setting and Sample**

This is a single site study, located at the University of Akron, in Akron, Ohio. This site was chosen for its convenience. The participants were recruited from junior level nursing

students enrolled in Nursing of Childbearing Families during the second seven and one half weeks of the fall 2015 semester and the first seven and one half weeks of the spring 2016 semesters. The total number of participants was 99 students. 44 of those students received the video intervention while 45 of the participants received the written/photographic intervention. Data collection began only after IRB approval and continued until data had been obtained from at least 50 participants. No students were excluded from participation. Those students who chose to opt out of participating in the study still received the intervention.

### **Data Collection Methods**

Enrollment in this study required consent (Appendix C) from all participants in order to proceed. Permission was obtained from the faculty residing over Nursing of the Childbearing Family.

All data was collected during two separate sessions in the Learning Resource Center. A pretest was administered to determine each participant's self-believed learning preference, demographic information, and their pre intervention knowledge and confidence concerning infant hunger cues (Appendix E). Next each participant received the intervention, which consisted of either a short video containing visual, written, and audio examples of each hunger cue, or they were directed to study a visual teaching aid containing written information and photographic still images of each infant hunger cues (Appendix B). The intervention received was randomly selected depending on each participant's class session. After the intervention each participant then completed a posttest consisting of the same questions previously asked about the participant's knowledge and confidence concerning infant hunger cues (Appendix E).

A Qualtrics survey was used to collect all data and administer the intervention. Students were emailed a link to the survey, upon opening the survey students read a consent, and by starting entering into the survey students gave their consent. There were three parts to the survey the first part will collect demographic information and administer the pre test. The second part of the survey administered the intervention. The third part of the survey administered the posttest. The interventions will be delivered to each participant through the use of the Qualtrics system for surveys. All data gathered from the pretest posttest (Appendix E), and the demographic information (Appendix D) was downloaded into the SPSS 20 system for data analysis. All information and data gathered remains private and confidential, available only to those individuals directly involved in the research process.

### **Measures**

Demographics of this study include age, ethnicity, GPA, whether the student is enrolled in the traditional BSN program or if the student is enrolled in the accelerated BSN program, gender, and whether the student has children of their own or has childcare experience. A paired t-test will be used to compare to the results from the two different educational interventions and aid in determining if the multimodal approach to teaching is more effective than a single modality approach.

### **Results**

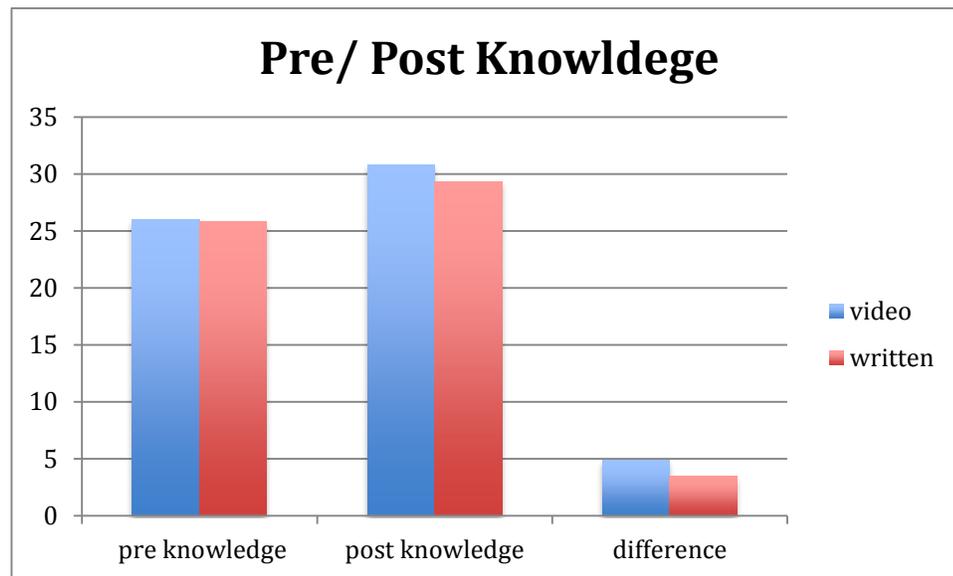
Senior level statistics students, under the instruction of their professor, performed the data analysis. The programs used to analyze the data were SPSS and Minitab. Prior to performing the analysis the statistics students recoded the data.

The sample was comprised of 93 students with 82 completing the survey. Of those n-82 students n = 46 were randomly selected to participate in the survey containing the handout only, while the remaining students n = 38 received the survey containing the video. The surveys were designed to examine basic knowledge of hunger cues as well as the confidence level of each student. The variables used in the data analysis included, type of program the student was enrolled in (accelerated program or basic four year program), the students preferred learning modality, age, childcare experience, having their own children, gender, nationality, and grade point average.

Knowledge of hunger cues was measured based on the number of correctly identified early, mid and late hunger cues, if all signs of infant hunger were correctly identified, a maximum score of 36 was obtained. Knowledge gained was measured by looking at the change in score from the pre- to the post-intervention survey. Confidence was measured using a four point Lickert scale.

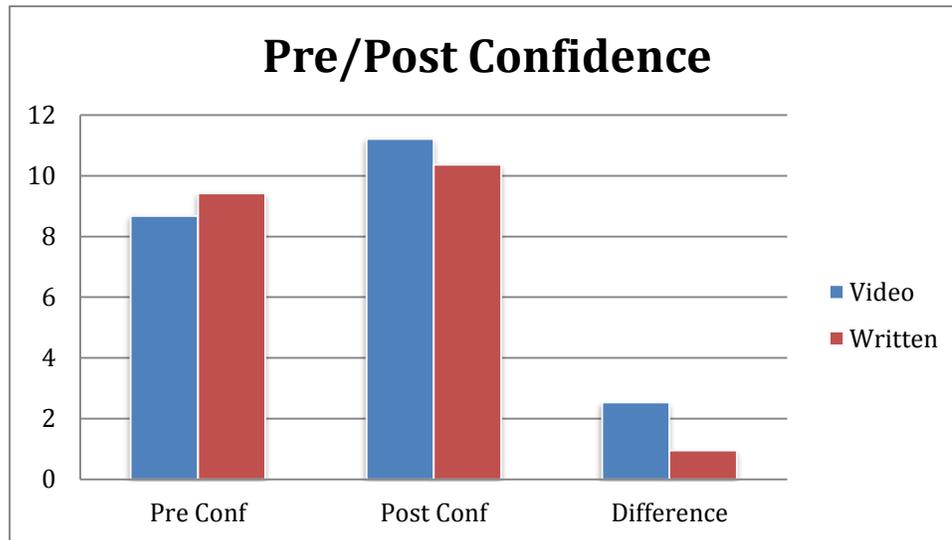
The main focus of this study was to evaluate the effectiveness of two different educational interventions, multimodal (video) and unimodal (handout), on students' knowledge and confidence levels. Analysis of the differences in the knowledge gained based on the type of instructional intervention (handout versus video), revealed there is no evidence to support or reject the hypothesis that the video would significantly increase the knowledge of hunger cues over the knowledge gained from the use of the handouts. A mean score of 3.49 was obtained by the students assigned the survey containing the handout, while a mean score of 4.85 resulted in a difference of 1.365 ( $t = 1.63$ ,  $p = 0.107$ ). Although the average mean that resulted from the video is greater, results of the t-test did not find the difference significant.

Table 1



When analyzing the results of the confidence levels of the students who received the handout survey, the participants had a mean confidence level of .99 where as those students who participated in the video survey had a mean confidence score of 2.46, resulting in a difference of 1.471 ( $t = 3.128$ ,  $p = .002$ ). These results indicate that participants who were exposed to the multimodal teaching method from the video yielded a higher level of confidence. Thus proving the original hypothesis that the survey containing the video format would increase confidence levels in students.

Table 2

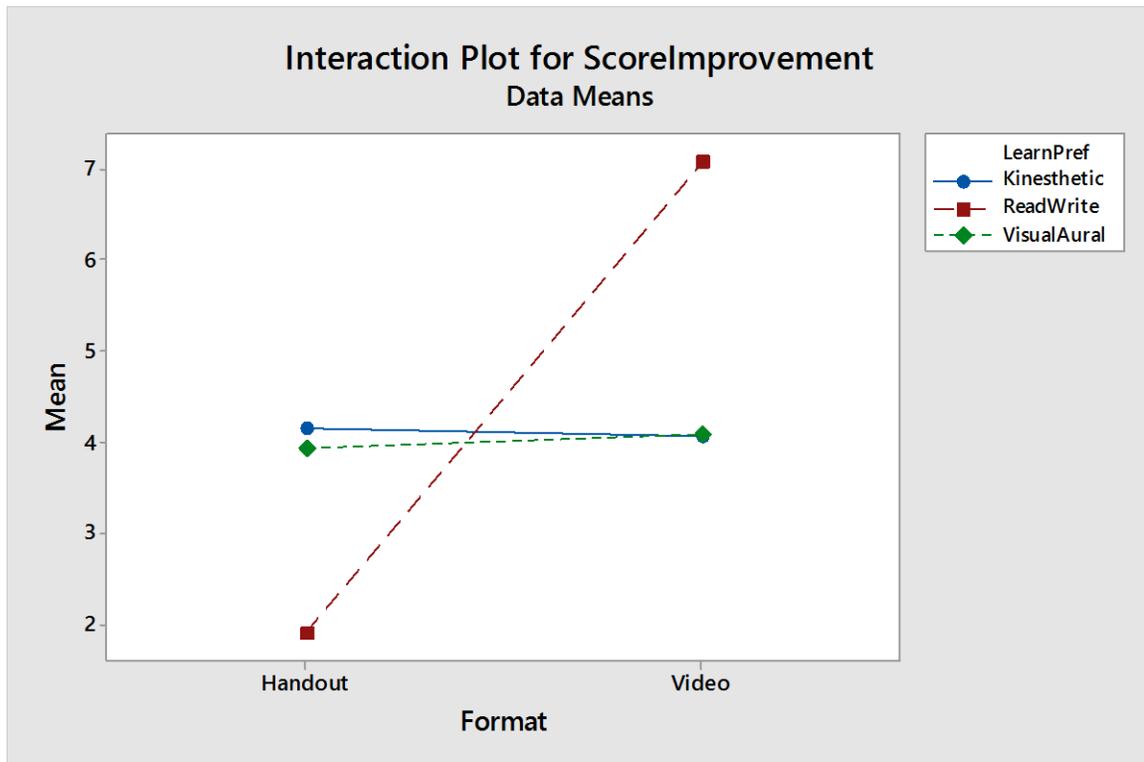


After analyzing the data regarding confidence and knowledge the results indicate that there are several positive correlations that can be found within the data. There is a significant correlation between the improvement in knowledge scores and the improvement in confidence scores overall,  $r = 3.76$ ,  $p = 0.000$ . These results show that if confidence levels increase knowledge scores also increase. Another positive correlation that was found in the data is one between pretest knowledge scores and pre test confidence scores. Before the intervention there is a positive correlation,  $r = .324$ ,  $p = .003$ . These results show that the more confident the student was prior to the intervention, the greater the scores were on the knowledge test. Similar results were obtained post test, however, the correlation was weaker although still significant  $r = .224$ ,  $p = .046$ .

Analyzing the data pertaining to learning style preferences consisted of looking at each learning style compared to the handout and the video improvement scores. Using a 2-way

ANOVA the  $p = .894$ . Noting there is no significance difference in the improvement of one learning preference over another. There is however a difference between the interventions when examining the learning preferences. By observing the graph below it can be noted that there is little to no difference in the improvement in knowledge scores for those that preferred Kinesthetic or Video/Aural but there is a significant improvement in knowledge for those who have a preferred style of Read/Write; for that group those who received video instruction showed surprisingly greater improvement in their knowledge scores than those who received a handout.

Table 3



Results showing the differences between the Traditional 4 year students versus the Accelerated students are as follows, pretest results reveal the Accelerated students and

Traditional four year students had a mean difference of 1.614 resulting in a ( $t = 2.32, p = 0.023$ ) this results displays a significantly higher pretest knowledge base in the accelerated students. However there is no significant difference in the improvement of knowledge when comparing the two groups in the posttest as observed with a  $p = 0.992$

The Accelerated students had significantly higher average confidence levels prior to the intervention, after intervention, the average confidence levels of the two groups were about the same. The Traditional students increased in confidence by a significantly greater amount with a mean difference of -1.146, ( $t = -2.12, p = 0.037$ ).

### **Discussion**

The purpose of this study was to determine if students learn better using multimodal teaching methods such as videos, compared to using single modal approaches such as learning from a handouts or power points. After all the results were obtained and examined, confidence was the area where the greatest improvement is seen. Looking most of the different variables it can be noted that an improvement in confidence levels with both interventions. Confidence levels did have a greater increase with the multimodal intervention.

When comparing the study findings with those of previous studies on learning style preferences, knowledge, and confidence it was found that the data supported typical outcomes identified in other studies. The knowledge scores showed significant improvement across all fields after the interventions. This finding is inline with the findings from Dobson's 2010 study where he also noted that increased knowledge levels due to being taught within the preferred learning modality scores would improve. This study included a pre, post -test intervention on knowledge on newborn hunger cues and confidence in ones knowledge and ability to reteach the

material. In other studies, such as those by Terregosa (2012), Sinha (2012), and Vark (2015) it was concluded that providing teaching and learning opportunities within ones preferred learning style there is a greater increase in knowledge and a correlated increase in test scores based on students in varying majors. All of the studies also concluded that offering multiple teaching methods increased overall scores.

When teaching new parents the importance of early infant hunger cues and feeding methods, Malagon-Maldonda (2015), Iwinski (2003), Reyna (2006), found that by modifying teaching styles and methods during discharge teaching to new parents, those parents retain a greater amount of the information taught and continue to utilize the information post discharge, thus influencing care and feeding of the newborn. When specifically looking at increasing student confidence and competence in discharge teaching Wagner (2009) concludes that by the use of multiple teaching methods students were better equipped for clinical rotations, providing discharge teaching, and building confidence and competence with newly acquired skills. Overall, this study found similar results suggesting that using multiple multi- modal teaching methods should improve knowledge and confidence among nursing students.

The VARK theory by Fleming states that most individuals will associate a preference for a particular modality or learning style, however most people are actually multimodal. There are no hard and fast boundaries when you look at modalities, and so, even if they don't know most people are learning in ways they didn't think they were (Vark, 2015). Centered on the VARK theory it was anticipated that by introducing new material in a multimodal format we would be able to increase knowledge and confidence in a larger number of students than if we introduced the material with a unimodal format. After analyzing the data, it is clear that in fact knowledge and confidence levels increased across the board with both unimodal and multimodal formats.

The data shows that there is a significant improvement in the knowledge scores overall. However, when looking specifically at the difference between pre and post -test results pertaining to improvement in knowledge; in comparison to the different interventions, there was insufficient evidence to either support or reject the hypothesis that the video would show statistically significant improvements in knowledge scores greater than that of the improvement observed when analyzing the improvement scores associated with the knowledge gained from the handouts. This could possibly be explained by results that Guan (2009) found when he was also studying modality effects. In his study he theorized that the lack of significant results could be due to the cognitive load theory, this theory simply puts states, that if you try to input too much information using too many modalities at one time it may impair learning due to the brain needing to split attention to be able to process the different types of information it is receiving.

### **Conclusion**

Increases in both knowledge and confidence were gained after a pretest, posttest intervention including either a video or handout. This study was a single setting study, which limits the generalizability of the study, also the sample size was small numbering only 86 participants and the study did not contain a control group. Some of the participants had experience dealing with infant hunger cues due to having their own children or having prior childcare experience, which may have influenced results by decreasing the improvement differences between pre and post testing. These limitations may have influenced the findings within the study. However, the results can lead us to the conclusion that multimodal teaching can increase both knowledge and confidence in nursing students, which should improve the student's ability to confidently perform both in the clinical setting while in school and increase their ability to effectively teach new parents while admitted to the hospital and properly prepare them to feed

and care for their newborn in their own home. I believe that future studies should be implemented in order to strengthen the idea that multi-modal learning techniques should be included in discharge teaching, and by using these techniques; improvements in knowledge and confidence scores are seen.

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**Appendix A**

**Research Proposal ROL Summary Table**

APA formatted reference	Problem.  Research Purpose &/or  Research Question	Theoretical Framework  What is it and how is it used?	Design of study, Site, Population, Sampling Method. Sample Size.	Variables and measures/ tools. Reliability and validity of measures/ tools	Findings  Conclusions	Implications	Limitations of findings
<p>1  Guan, Y. (2009). A Study on the Learning Efficiency of Multimedia-Presented, Computer-Based Science Information. <i>Journal Of Educational Technology &amp; Society</i>, 12(1), 62-72.</p>	<p>The need to reexamine the validity of the modality effect proposed by the cognitive load theory and the cognitive theory of multimedia learning.  Purpose statement: for Experiment 1: to investigate whether using dual-mode</p>	<p>Cognitive load theory, the modality effect, the dual coding theory  What is it and how is it used?  Cognitive load theory often refers to the nature of short-term retention of verbal stimuli.  the modality effect, the dual coding theory-</p>	<p>Design:  pre test post test  Site: University in Taiwan  Population: college students whose majors were Applied Linguistics, Physics, Business Administration, or Electrical</p>	<p>Independent variable and tool: learning time, viewing sequences as well as viewing frequencies  V&amp;R of tool:  Dependent variables and tool: knowledge gained  V&amp;R of tool: Levene’s test is</p>	<p>Conclusions: the modality effect observed in the short-term verbal memory studies cannot be legitimately applied to multimedia-based learning scenarios in which subjects are required to comprehend and learn meaningful subject matter. dual mode presentation</p>	<p>Implications:  That much more study still needs to be done to truly rule out interference due to redundancy as well as the benefit or</p>	<p>Limitations of findings: the subjects were all Taiwanese first-year university students with different majors that are not related to neuroscience, cognitive science or cognitive psychology. Whether the same result patterns could be replicated with students</p>

<p>Primary source</p>	<p>presentation really facilitates the learning of scientific information, especially whether the modality effect could always be observed when the learning material contained auditory information with visuals of different complexities, and finally, whether the redundancy effect is simply caused by the presence of redundant information or rather by the interference during information processing.</p> <p>Experiment 2: to investigate whether</p>	<p>both theories suggested that working memory contains modality- or code-specific processors, but the theories did not indicate that working memory always has more capacity to process information presented in different modalities than if it were presented in the same modality.</p>	<p>Engineering.</p> <p>Sampling method: convenient</p> <p>Sample size: 178</p>	<p>an inferential statistic used to assess the equality of variances for a variable calculated for two or more groups, If the resulting P-value of Levene's test is less than some significance level (typically 0.05), the obtained differences in sample variances are unlikely to have occurred based on random sampling from a population with equal variances.</p> <p>ANCOVA evaluates whether population means of a dependent variable (DV)</p>	<p>yielded either negative or no effect on subjects' posttest scores and learning efficiency. it was found that the presence of redundant information alone did not impair learning. Since the speed of self-running on-screen text was synchronized with that of the auditory text, it seems that the processing of visual and auditory text did not interfere with each other but was harmonized or even reinforced. The overall results of this study suggest that educational practitioners need to think</p>		<p>whose majors are related to the subject matter to be learned is unclear. For another, all subjects in this study speak Mandarin, a logographic language, which is different from alphabetic languages.</p>
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	<p>subjects could perform better with auditory rather than with visual information when verbal-only material was provided, and whether the length of verbal information would exert an effect on learning.</p> <p>Research question: If the modality effect occurs, subjects who received auditory information with simple or medium complexity of diagrams should outperform their counterparts, but not if the diagrams are too complex. Using</p>			<p>are equal across levels of a categorical independent variable (IV) often called a treatment, while statistically controlling for the effects of other continuous variables that are not of primary interest, known as covariants (CV) or nuisance variables. Mathematically, ANCOVA decomposes the variance in the DV into variance explained by the CV(s), variance explained by the categorical IV, and residual variance. Intuitively, ANCOVA can</p>	<p>seriously about the effects of multimedia presentations on learning efficiency. Especially, the use of dual-mode presentation as an instructional format should be considered cautiously, or it may only impair learning</p>		
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	<p>animation as guidance for visual search should reduce the load on visual memory and thus, restore the modality effect (cf. the study by Jeung et al., 1997). Finally, if the redundancy effect exists, presenting the same text both visually and aurally along with animation should greatly impair learning.</p>			<p>be thought of as 'adjusting' the DV by the group means of the CV(s).</p>			
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<p>2</p> <p>Dobson, J. L. (2010). A comparison between learning style preferences and sex, status, and course performance. <i>Advances In Physiology Education</i>, 34(4), 197-204. doi:10.1152/advan.00078.2010</p> <p>Primary source</p>	<p>Problem: Physiology is a subject that is complex and difficult for many students to internalize. It is therefore important for physiology instructors to take extra steps to make sure that they are effectively communicating the information to their students.</p> <p>Purpose statement: instructors that use multiple learning styles are more likely to present information in the particular style that is preferred by</p>	<p>Theoretical Framework: According to Flemming, who is a learning style expert and the author of what is likely the most widely used sensory modality preference assessment, there are four major sensory modalities. Those four modalities are visual (V), aural (A), read-write (R), and kinesthetic (K). Students with V preferences learn best using pictures, graphs, diagrams, etc. Those with A preferences learn best by listening to and discussing material. Those</p>	<p>Design: questionnaire</p> <p>Site: University of Florida</p> <p>Population: students from all 2009 APK 3110 Exercise Physiology and APK 6116 Physiological Bases of Exercise and Sport courses.</p> <p>Sampling method: convenient</p> <p>Sample size: 67 students total, 53 undergraduate and 15 graduate</p>	<p>Independent variable</p> <p>Status: undergraduate or graduate,</p> <p>Sex: women or men</p> <p>Perceived Sensory modality: VARK</p> <p>Assessed Sensory Modality:</p> <p>V</p> <p>A</p> <p>R</p> <p>K</p> <p>VK</p> <p>AK</p> <p>AR</p> <p>RK</p> <p>VAK</p>	<p>Include findings so you can describe them in your ROL section and then later compare them to yours in the discussion section you will eventually write.</p>	<p>Implications: Students are more likely to use multimodalities , rather than just one modality even if they perceive to believe they have just one.</p>	<p>Limitations: the number of participants. This was particularly evident with the graduate students, of whom there were only 14 respondents</p>
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	<p>each student; thus, student learning is enhanced</p> <p>Research question: the two specific purposes of this investigation were to use a group of exercise physiology students to 1) compare their perceived and assessed sensory modality preferences and 2) examine the relationships between those preferences and status (i.e., undergraduates vs. graduates), sex, and course performance.</p>	<p>with R preferences learn best with textual materials. Finally, K learners internalize information best when they are involved physically (e.g., touching and manipulating materials), a minority of people (36%) prefer to use one sensory modality when internalizing information (unimodal), whereas the majority of people (64%) prefer to use two, three, or all four modalities (multimodal). This finding has been confirmed by the majority of recent</p>		<p>VRK                  ARK                  VARK</p> <p>V&amp;R of tool: ANOVA is useful in comparing (testing) three or more means (groups or variables) for statistical significance                  Kruskal–Wallis is used for comparing two or more samples that are independent, and that may have different sample sizes                  Dependent variables and tool: perceived</p> <p>V&amp;R of tool</p>			
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		<p>articles that have used Flemming’s VARK assessment to investigate learning style preferences in physiology, or very similar (e.g., medical or dental), students. More specifically many of the studies performed on this subject have found that the majority of students have multimodal preferences.</p>					
<p>3 Reyna, B., Pickler, R., &amp; Thompson, A. (2006). A descriptive study of mothers'</p>	<p>Problem: Before discharge, mothers have concerns regarding feeding their infants safely, making sure</p>	<p>Theoretical Framework: John Bowlby’s theory of attachment. This</p>	<p>Design: qualitative descriptive  Site: undisclosed 40-</p>	<p>Independent variable and tool: ability to observe and describe changes in infant feeding skills</p>	<p>Finding and conclusions:  3 themes were identified: interpreting infant behaviors, managing the</p>	<p>Implications  Because of the vast limitations of this study it is very important to follow this up with more</p>	<p>Limitations: this was a qualitative descriptive study with a small sample size selected from participants in a</p>

<p>experiences feeding their preterm infants after discharge. <i>Advances In Neonatal Care (Elsevier Science)</i>, 6(6), 333-340.</p> <p>Primary source</p>	<p>their infants are receiving adequate calories, and learning how to advance the feeding plan once home. Many mothers experience a renewed crisis after their infants come home. Despite maternal confidence before infant discharge, mothers may realize that they might not be fully prepared to care for their infants.</p> <p>Purpose statement: to explore mothers' perceptions of their</p>	<p>relationship between a mother's observations, past experiences, and perceived importance has its foundation in the concept of internal working models. a working model is an internal or a mental model of experience that operates in relation to events to regulate goal-directed thought and action. A mother's motivations, feelings, thoughts, and feeding approach might be functions of her internal working model.</p>	<p>bed Level III NICU in an 820-bed tertiary care, urban university medical center, with approximately 1200 infant deliveries per year.</p> <p>Population: Mothers of infants born at &lt; 32 weeks gestation, were medically stable and able to take oral feeding.</p> <p>Sampling method: stratified sampling. Those who participated must have been participating in</p>	<p>V&amp;R of tool: data was examined by using a phenomenologic approach.</p> <p>Dependent variables and tool: interview questions</p> <p>V&amp;R of tool</p>	<p>evolving feeding process, and realizing knowledge gaps. All mothers addressed these themes during the interviews.</p>	<p>extensive and in-depth studies.</p>	<p>larger study. It was a convenience sample; the mothers were invited to participate, therefore, it is not representative of all mothers of preterm infants.</p> <p>This was a descriptive study of mothers' experiences in feeding their infants after discharge. Mothers might have forgotten or minimized events that occurred immediately after discharge, introducing some recall bias in the findings.</p>
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	experiences in feeding their preterm infants in the early weeks after hospital discharge.		another larger study. Convenience sample because the mothers were invited to participate.  Sample size: 55 consented only 27 mothers and 30 infants returned for the interviews				
4	<p>Problem: Students' academic achievement depends critically on the teaching effectiveness of the instructor.</p> <p>Purpose statement: The</p>	<p>Theoretical Framework</p> <p>Dunn and Dunn learning styles model (DDLMS)</p> <p>What is it and how is it used?</p>	<p>Design: Quasi-experimental</p> <p>Site: university located in New York City</p> <p>Population: 27</p>	<p>Independent variable and tool:</p> <p>18 learning style variables, gender, difficulty level of alternative tests</p> <p>V&amp;R of tool: Pindyck and Rubinfeld</p>	<p>Finding and conclusions:</p> <p>An instructor can assess whether a student has or has not learned the material covered in any discipline by administering a test. However, the student's test score, high</p>	<p>Implications</p> <p>Test score are not always an effective method to measure whether or not a student actually learned and understands material and will be able to use that information in</p>	<p>Limitations:</p> <p>The sample size of economics and accounting students</p>

<p>NT: TESTING A LEARNING STYLES THEORY. <i>International Journal Of Education Research</i>, 7(1), 1-15.</p>	<p>main objective of this study is to determine if instructors could effectively utilize information about their students' learning styles to enhance students' academic achievement. A second objective of this study is to rank order the relative impact of the alternative learning style categories on student achievement.</p> <p>A third objective of this study is to determine the relative importance of the alternative learning style</p>	<p>?</p> <p>Contends that the ability of an instructor to effectively convey knowledge to students depends on the extent to which the instructor's teaching method matches the pattern of learning style preferences of his/her students.</p>	<p>economics student 34 accounting students all students attended an accredited college of business</p> <p>Sampling method: convenience</p> <p>Sample size:61</p>	<p>Dependent variables and tool: test results</p> <p>V&amp;R of tool</p>	<p>or low, does not by itself reveal the factors that contributed to the student's performance.</p>	<p>the future. More studies and information is needed to find out what actually is working and not working for each individual student.</p>	
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	<p>variables that compose the learning style category that has the greatest impact on student achievement</p> <p>A fourth objective of this study is to determine whether learning styles differ in a meaningful way between students in accounting courses and economics courses.</p>						
<p>5</p> <p>Malagon-Maldonado, G., Hiner, J. B., &amp; Lanciers, M. (2015). Broadening the Horizons on Predictors of Discharge Teaching, Discharge</p>	<p>Purpose statement:</p> <p>To explore the predictors of postpartum mothers' perceptions of the quality of discharge teaching,</p>	<p>Theoretical Framework</p> <p>What is it and how is it used?</p> <p>Conceptual model adapted from the middle range theory of Meleis</p>	<p>Design: exploratory research design</p> <p>Site: Southwestern women's specialty hospital with 209 beds.</p>	<p>Independent variable and tool:</p> <p>Gestational age, maternal education, and number of children</p> <p>Maternal/ infant length of stay, delivery mode,</p>	<p>Finding and conclusions:</p> <p>These data provide evidence of the critical role of the nurse in educating patients and families to</p>	<p>Implications</p> <p>There are many variables that can be involved in the satisfaction of discharge teaching</p>	<p>Limitations:</p>

<p>Readiness, and Postdischarge Outcomes... Proceedings of the 2015 AWHONN Convention. <i>JOGNN: Journal Of Obstetric, Gynecologic &amp; Neonatal Nursing</i>, 44S58. doi:10.1111/1552-6909.12628</p> <p>Primary source</p>	<p>readiness for hospital discharge, and associated outcomes with postdischarge coping difficulty and use of health care.</p>	<p>provided a framework for exploring transition concepts relevant to postpartum mothers going home</p>	<p>Population: English and Spanish speaking, mixed parity, postpartum mothers who had vaginal or cesarean births of healthy infants</p> <p>Sampling method: convenience</p> <p>Sample size: 185</p>	<p>and the quality of discharge teaching</p> <p>Dependent variables and tool: postpartum mothers' perceptions of the quality of discharge teaching.</p> <p>V&amp;R of tool</p>	<p>facilitate a smooth transition home after childbirth.</p>		
<p>6</p> <p>Wardle, K., De Domenico, M., &amp; Li Ming, W. (2014). Understanding infant feeding practices of new mothers: findings from the Healthy Beginnings</p>	<p>Problem: With increasing recognition of the need to improve infant feeding practices as a means of early childhood obesity intervention,</p>	<p>Theoretical Framework</p> <p>What is it and how is it used?</p>	<p>Design: Quantitative and Qualitative</p> <p>Site: southwest Sydney, Australia</p>	<p>Independent variable and tool: age, relationship status, English speaking in the home, level of education, and level of income.</p> <p>V&amp;R of tool:</p>	<p>Finding and conclusions: A significant proportion of mothers did not meet the WHO recommended guidelines for breastfeeding. The first week of life was the most critical</p>	<p>Implications</p> <p>Participants had mixed experiences with clinicians in hospital; some found the care very supportive others had negative experiences.</p>	<p>Limitations: generalizability is limited due to the locality of the study area since southwest Sydney is the most socially and economically disadvantaged area of</p>

<p>Trial. <i>Australian Journal Of Advanced Nursing</i>, 32(1), 6-15.</p>	<p>Purpose statement:  This study aimed to explore the experiences of infant feeding of first-time mothers and identify the barriers and facilitators in relation to healthy infant feeding practices.  Research question:  To understand mothers' experiences of infant feeding and identify the barriers and facilitators in relation to healthy infant feeding practices.</p>		<p>Population: women of lower social and economic status, living in south Sydney, having their first child, over the age of 16, and able to communicate in English  Sampling method:  In the quantitative study 667 mothers were surveyed by convenience- then 561 mothers completed follow up survey  The qualitative sample used purposive sampling</p>	<p>audio taped and transcribed interviews. NVIVO data software for data management, coding and thematic analysis.  Dependent variables and tool: feeding practices  V&amp;R of tool</p>	<p>time for first time mothers to establish and consolidate breastfeeding. Education around appropriate timing of introduction of solids for both mothers and health professionals would be beneficial in ensuring consistency and adherence to the guidelines.</p>	<p>Follow-up studies with staff directly involved with mothers and newborn babies is needed to give further insight into addressing the reasons why mothers perceive they have a lack of support in hospital. While midwives have breastfeeding expertise, employed lactation consultants to assist breastfeeding mothers in the hospital setting would be useful. Recent studies (Li et al 2010) have also indicated breastfed infants may be better able to self-regulate</p>	<p>metropolitan Sydney. The analysis did not take into account method of milk feeding and if this influenced the introduction of solids and did not take into account socio-demographic data or lifestyle behaviors such as smoking and exercise which may have given a different insight into groups who commence solids prior to 6 months. The questionnaire and in depth interviews only asked why mothers started solids early, it would be beneficial to find out the reasons mothers waited until six</p>
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			<p>Sample size: Quantitative, 667/561</p> <p>Qualitative, 25</p>			<p>their intake, meaning they will only feed until they feel full; this could also have implications for childhood obesity as breastfed babies will only eat what they need. Also educating new mothers on understanding these infant cues around feeding is important, as each feed will be different depending on the baby's needs.</p>	<p>months, as this may have given insight into the development of further interventions to assist mothers when making decisions about introducing solids.</p>
<p>7</p> <p>Gross, R. S., Fierman, A. H., Mendelsohn, A. L., Chiasson,</p>	<p>Problem:</p> <p>There has been limited study of maternal perception of</p>	<p>Theoretical</p> <p>Framework: perception of hunger and satiety may</p>	<p>Design:</p> <p>Secondary analysis of a larger study</p>	<p>Independent variable and tool: Maternal country of birth, education level Maternal</p>	<p>Findings and conclusions:</p> <p>Include findings so you can describe them in your</p>	<p>Implications</p> <p>How mothers learn feeding cues and the mother</p>	<p>Limitations:</p> <p>These include: quasi-experimental designs, small samples, one-</p>

<p>M. A., Rosenberg, T. J., Scheinmann, R., &amp; Messito, M. J. (2010). Maternal perceptions of infant hunger, satiety, and pressuring feeding styles in an urban Latina WIC population. <i>Academic Pediatrics</i>, 10(1), 29-35. doi:10.1016/j.acap.2009.08.001</p> <p>Secondary source</p>	<p>infant feeding cues. Responsiveness to infant feeding cues and related parental feeding behaviors have potential to affect weight outcomes through alteration of the infant's long-term ability to self-regulate energy intake.</p> <p>Purpose statement:</p> <p>to assess maternal perception of infant feeding cues and pressuring feeding styles in an urban Latina Special Supplemental Nutrition Program for Women, Infants, and</p>	<p>have a future effect on obesity in children</p> <p>What is it and how is it used?</p> <p>It has been derived from many studies on the subject that early infant feeding patterns have an effect on the child's future eating habits.</p>	<p>Site:</p> <p>4 New York City WIC</p> <p>Population:</p> <p>Latino women greater than or equal to 18 years of age with a singleton infant &lt; 5months, and a working telephone number</p> <p>Sampling method:</p> <p>Sample size:</p>	<p>and infant characteristics. Maternal perceptions of infant hunger and satiety.</p> <p>V&amp;R of tool: 4 point Likert scale (agree, strongly agree, disagree, strongly disagree)</p> <p>Dependent variables and tool:</p> <p>variables were the maternal perceptions, pressuring feeding style</p>	<p>ROL section and then later compare them to yours in the discussion section you will eventually write.</p>	<p>interpretations of those cues can influence the feeding styles imposed on the baby.</p>	<p>site studies, convenience sampling, lack of power analysis to determine sample size, tools with inadequate validity and reliability, high drop out rates, inconsistencies in data collection, etc</p>
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	<p>Children (WIC) population.</p> <p>Research question:</p> <p>1) characteristics associated with perceptions of cues and pressuring to feed, including sociodemographics, breastfeeding, and maternal body mass index; and 2) whether perceptions of cues were associated with pressuring feeding style.</p>			V&R of tool			
8	Problem:	Theoretical	Design: quantitative,	Independent variable and	Findings and Conclusions:	Implications:	Limitations:

<p>Sinha, M., Naik, S., Jadeja, J., &amp; Patel, A. (2012). Gender Differences In Preferences Of Various Modalities Of Learning Styles Among Undergraduate Medical Students. <i>International Journal Of Basic and Applied Physiology</i>, Vol.2(Issue 1), 88-93. Retrieved May 23, 2015, from <a href="http://ijbap.weebly.com/uploads/1/3/1/4/13145127/17final_ijbap_2013_-_copy_.pdf">http://ijbap.weebly.com/uploads/1/3/1/4/13145127/17final_ijbap_2013_-_copy_.pdf</a></p>	<p>Learning style in students can vary by preferences of various modalities as visual (learning from graphs, charts, and flow diagrams), auditory (learning from speech), read-write (learning from reading and writing), and kinesthetic (learning from touch, hearing, smell, taste, and sight).</p> <p>Purpose statement: to assess gender differences in learning style preferences among</p>	<p>Framework</p> <p>Bruner and Piaget VARK (visual, auditory, reading/writing, and kinesthetic)</p> <p>What is it and how is it used?</p> <p>Learners with a V preference learn best by seeing or observing (drawings, pictures, diagrams, demonstrations, etc.). Learners that prefer an L-type are best suited to learn by listening to or recording lectures, discussing material, and talking through material with themselves or others. R-type learners learn</p>	<p>descriptive, survey</p> <p>Site: B.J. Medical College</p> <p>Population:100 undergraduate physiology student 50 male and 50 female students</p> <p>Sampling method: convenience</p> <p>Sample size: 100</p>	<p>tool: gender</p> <p>V&amp;R of tool: vark questionnaire</p> <p>Dependent variables and tool: gender preference</p> <p>V&amp;R of tool</p>	<p>Include findings so you can describe them in your ROL section and then later compare them to yours in the discussion section you will eventually write.</p>	<p>Men and women have different learning preferences men tend to be more multimodal then women so are able to vary their learning style to the way the instructor presents the information.</p>	<p>the results do not suggest that there is an innate difference in aptitude between genders<sup>23</sup>, nor is it promoting separation of genders in the learning process (i.e., separate science classes for males and females).</p>
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	<p>undergraduate students.</p> <p>Research question: Do the evolutionary biology and the social influences have a say in the preferences in learning styles of the students?</p>	<p>through interactions with textual materials. K-style learners perform best by using physical experiences: touching, performing an activity, moving, lessons that emphasize doing, and manipulation of objects</p>					
<p>9</p> <p>Wagner, D., Bear, M., &amp; Sander, J. (2009). Turning simulation into reality: increasing student competence and</p>	<p>Problem: Women want to know how to care for themselves and their newborns after childbirth (Bowman, 2005, 2006) and rely on nurses to</p>	<p>Theoretical Framework</p> <p>Students' clinical confidence can increase with simulator experiences as they practice</p>	<p>Design: survey</p> <p>Site: women's health clinical faculty at a southeastern</p>	<p>Independent variable and tool: teaching methods</p> <p>V&amp;R of tool: survey</p>	<p>Finding and conclusions:</p> <p>Multiple teaching methods equipped students for this clinical rotation, providing</p>	<p>Implications</p> <p>By using multiple teaching methods repetitions and reinforcement. Student nurses became more confident and</p>	<p>Limitations:</p> <p>Sample size, further research still need to determine the effectiveness of this intervention.</p>

<p>confidence. <i>Journal Of Nursing Education</i>, 48(8), 465-467. doi:10.3928/01484834-20090518-07</p>	<p>educate them.</p> <p>Purpose statement: developed a new experience for senior nursing students with the goal of increasing students' levels of knowledge and confidence in teaching patients and other family members how to care for new mothers and their infants.</p>	<p>skills before actually working with patients</p> <p>What is it and how is it used?</p> <p>Using manikins and simulation exercises to assist in student learning has been shown to improve clinical performance</p>	<p>university</p> <p>Population: nursing students</p> <p>Sampling method: convenience</p> <p>Sample size: 64</p>	<p>Dependent variables and tool: confidence levels</p>	<p>repetition and reinforcement to help students build competence in newly acquired nursing skills. Mothers benefited from individualized learning opportunities rendered by the students. Staff nurses valued the students' contributions, as they came prepared to implement teaching for the new mothers. Students acquired tools to use throughout their professional career and expressed satisfaction with their effectiveness in providing quality patient</p>	<p>patient satisfaction was improved using these interventions.</p>	
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10 Wagner, D. L., Bear, M., & Davidson, N. S. (2011). Measuring Patient Satisfaction With Postpartum Teaching Methods Used by Nurses Within the Interaction Model of Client Health Behavior. <i>Research &amp; Theory For Nursing Practice</i> , 25(3), 176-190. doi:10.1891/1541-6577.25.3.176	<p>Problem: Maternity nurses have a responsibility to provide extensive teaching to new mothers after they deliver their babies prior to discharge from the hospital. Since patient satisfaction is an important indicator of nursing care quality, it is incumbent upon nurses to know which method of discharge teaching enhances satisfaction</p> <p>Purpose statement:</p>	<p>Theoretical Framework</p> <p>Cox's (1982, 2003) Interaction Model of Client Health Behavior (IMCHB) provided the framework for this study.</p> <p>What is it and how is it used?</p> <p>theory that incorporates the uniqueness of the patient, the patient–nurse relationship, and their combined influence in determining the health outcomes of</p>	<p>Design: A quasi-experimental, post-test design</p> <p>Site: Northeast Florida hospital and Barry University.</p> <p>Population: Postpartum women in a hospital in northeast Florida with a maternity unit that delivers approximately 100 low-risk obstetrical patients each month.</p>	<p>Independent variable and tool: age, marital status, and parity;</p> <p>V&amp;R of tool: chi-square, Kendall’s tau, and Mann-Whitney <i>U</i> tests</p> <p>Dependent variables and tool: postpartum discharge teaching by nurses; and satisfaction with nursing care</p> <p>V&amp;R of tool: SPSS version</p>	<p>Findings and Conclusions:</p> <p>Implementation of discharge teaching should be tailored to the individual's singularity and needs, using various methods to enhance delivery of postpartum health care teaching and their satisfaction with nursing care. Providing individualized care, based on the expressed needs of the patient, was demonstrated in this study to result in high satisfaction with nursing</p>	<p>Implications:</p> <p>The data showed there was no relationship between new mothers background variables of age, marital status, and parity; their participation in postpartum discharge teaching by nurses; and satisfaction with nursing care. Results indicated that new mothers who received the traditional method of discharge instruction provided by nurses were just as satisfied as</p>	<p>Limitations:</p> <p>lacked racial and ethnic diversity, limiting the possibility of generalizing, sample size was small, study results also may reflect a double Hawthorne effect. Because the mothers were aware of their participation in this study, such awareness may have affected their response on the satisfaction survey.</p>

	<p>The purpose of this study was to determine the relationship between new mothers' interaction with nurses using different methods to provide postpartum discharge teaching and their satisfaction with nursing care. The relationship between new mothers background variables and the level of their satisfaction with nurses teaching methods was also explored.</p>	<p>patient care</p>	<p>Sampling method: self-selected convenience</p> <p>Sample size: 70</p>	<p>14.0.</p>	<p>care with both methods of providing postpartum discharge teaching.</p>	<p>those who received the demonstration/r eturn demonstration method of discharge instructions provided by nurses.</p>	
11	<p>Problem: How often should a</p>	<p>Theoretical</p>	<p>Design:</p>	<p>Independent variable and</p>	<p>Findings and</p>	<p>Implications:</p>	<p>Limitations:</p>

<p>Iwinski, S., &amp; Gotsch, G. (2003). Feeding on Cue. <i>New Beginnings</i>, 20(4), 126.</p>	<p>baby be fed?</p> <p><b>Purpose statement:</b></p> <p>Whether mothers feed their babies by cue or by the clock will be influenced by parents' culture and their individual preferences and values. However, biology suggests that cue- feeding is the better choice for breastfeeding mothers and babies.</p>	<p><b>Framework</b></p> <p>Human beings have survived and flourished because mothers have met these needs by responding freely to their babies' cues and behavior, particularly their feeding behaviors.</p>	<p><b>Meta analysis</b></p> <p><b>Site:</b> Connecticut</p>	<p>tool: knowledge about feeding cues, ability to properly breast feed (infant)</p> <p>V&amp;R of tool:</p> <p>Dependent variables and tool:</p> <p>V&amp;R of tool</p>	<p><b>Conclusions:</b></p> <p>When mothers can accurately interpret common newborn behaviors and recognize early feeding cues, they feel confident about responding to their baby's basic biological needs. Mother's prompt and consistent responses are rewarded with a healthy, happy, secure, and trusting infant who does not need to cry in order to get a response. Baby's contentment reinforces parents' confidence and parents enjoy being with their</p>	<p><b>Breastfeeding and learning and experience about hunger cues will help mothers and infants enter a happy and healthy ability to communicate.</b></p>	<p>This is an informative article based on research conducted by others. This is being used to help represent the importance of knowledge of hunger cues and what they are</p>
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					baby.		
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Appendix B

# FEEDING CUES

**1. EARLY CUES: "I'm hungry"**



Stirring      Mouth opening      Turning head Seeking/rooting

**2. MID CUES: "I'm really hungry"**



Stretching      Increasing movement      Hand to mouth

**3. LATE CUES: "Calm me, then feed me"**



Crying      Lots of movement      Color turning red

**CALM CRYING BABY BEFORE FEEDING**  
Cuddling, Skin-to-skin on chest  
Talking, Stroking



**LOOK FOR EARLY FEEDING CUES**

COUNTY OF LOS ANGELES  
**Public Health**  
Division of Chronic Disease & Injury Prevention

[CHOOSEHEALTHLA.COM](http://CHOOSEHEALTHLA.COM)

 **BreastfeedLA**

County of Los Angeles Public Health working for you. Made possible with funding from the Centers for Disease Control and Prevention through the Los Angeles County Department of Public Health. Used with permission from Women's and Newborn Services, Royal Selkirk and Women's Hospital, July 2013.

## Appendix C

### Consent

**Title of Study:** A comparison of the effectiveness of two educational interventions developed to teach infant hunger cues to junior level nursing students.

**Introduction:** You are invited to participate in a research project being conducted by Melissa Gainer, a nursing student in the College of Health Professions, School of Nursing at The University of Akron.

**Purpose:** The purpose of this project is to study two different learning interventions involving the knowledge of infant hunger cues in Junior nursing students enrolled in Nursing of the Childbearing Family.

**Procedures:** If you volunteer to participate in this study, you will be asked to complete a short survey about yourself. This survey should take approximately five minutes to complete, questions will include age, gender, GPA, marital status, childcare experience, the number of children you have, ethnicity, and your learning preferences. Then you will be instructed to complete a short pretest regarding you current knowledge of infant hunger cues, you will then watch a short instructional video on the computer. And after you will be giving a short posttest to measure the amount of information you obtained from the instructional video.

**Benefits and Risks:** You will not receive direct benefit from your participation in this study, but your participation may help us better understand and advance the teaching methods utilized to teach future nursing students. There are some possible risks involved in completing the survey because you are asked to answer questions about personal and other information. And although

we hope you respond to every item on the survey, whether or not you do is up to you!

**Right to refuse or withdraw:** Whether or not you take part in this study is completely up to you. Not participating or withdraw from the study at any time results in no consequences. Not participating in no way affects your standing or enrollment in your class.

**Anonymous and Confidential Data Collection:** No identifying information will be collected. No one will have access to any study information unless that person is a formal member of the research team.

**Confidentiality of Records:** Completed surveys and testing data will be stored within a secure database. Only study co-investigators and the project sponsor (a faculty member at The University of Akron) will have access to the information of the study. At the end of the study, all of the information will be destroyed. Also, surveys will be de-identified and each participant will be assigned a number to connect pre- and post-test data for analysis.

**Who to Contact with Questions:** If you have any questions about this study, you may contact Melissa Gainer (mdg58@zips.uakron.edu), Mrs. Debra Horning (Advisor) at (330) or dh79@uakron.edu, or Dr. Michelle Enlow (Advisor) at (330) 972-6422 or menlow@uakron.edu. The University of Akron Institutional Review Board has approved this project. If you have any questions about your rights as a research participant, you may call the IRB at (330) 972-7666.

**Acceptance & Signature:** I have read the information above and understand that my participation is voluntarily and by beginning this survey I agree to participate in this study.

**Appendix D**

## Student Demographic Questionnaire

1. I am a:

- A. Male
- B. Female
- C. Other

2. My age fits in which age category:

- A. 15-20 years of age
- B. 21-25 years of age
- C. 26-30 years of age
- D. 31-35 years of age
- E. 36-40 years of age
- F. 41-45 years of age
- G. Over 45 years of age

3. My Current GPA fits in which category:

- A. 4.0-3.5
- B. 3.4-3.0
- C. 2.9-2.5
- D. 2.4-2.0

4. What is your ethnicity or race? (Check all that apply)

- A. American Indian/Alaskan Native
- B. Asian American/Pacific Islander
- C. Black/African American/African
- D. Hispanic/Latino
- E. White/Caucasian

F. Other

5. Do you have a child/children of your own?

A. Yes

B. No

6. Do you have childcare experience?

A. Yes

B. No

7. Which of the following styles do you feel you most prefer to use when you are learning information? (Please circle only one answer.)

A. Visual: looking at and making pictures, animations, graphs, tables, etc.

B. Aural: listening to and participating in speeches, discussions, and question and answer sessions.

C. Read-write: reading and writing text associated with the book, class notes, etc.

D. Kinesthetic: engaging in physical experiences, manipulating objects, etc.

8. Are you currently enrolled in the accelerated BSN program or the four year traditional BSN program?

A. Accelerated program

B. Traditional four-year program

**Appendix E****Pre-Test / Post-Test Infant Hunger Cues Knowledge and Confidence Tool**

**Directions:** Select all that apply.

1. I know a baby is showing early hungry cues when he/she:

- a. Wakes up
- b. Starts to stir
- c. Hiccups
- d. Hand to mouth
- e. Has a tense body posture (closed fists and bent elbows)
- f. Has a dirty diaper
- g. Has increased movement and
- h. Opens and closes its mouth
- i. Cries
- j. Lip smacking
- k. Rooting
- l. Skin color turns red

2. I know a baby is showing mid level hunger cues when he/she:

- a. Wakes up
- b. Starts to stir
- c. Hiccups
- d. Hand to Mouth
- e. Has a tense body posture (closed fists and bent elbows)
- f. Has a dirty diaper
- g. Has increased movement and
- h. Opens and closes its mouth
- i. Cries
- j. Lip smacking
- k. Rooting
- l. Skin color turns red

