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Improving the Interprofessional Relationship Between Nurses and Speech-Language Pathologists: A Pilot Study

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IMPROVING THE INTERPROFESSIONAL RELATIONSHIP BETWEEN NURSES AND SPEECH-LANGUAGE PATHOLOGISTS: A PILOT STUDY

An Undergraduate Honors Thesis
Submitted in Partial fulfillments of
University Honors Program Requirements
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Abstract

The research presented in this thesis explores the impact of interprofessional education on undergraduate nursing and speech-language pathology students with an overall goal of improving the interprofessional relationship between the two fields. Utilizing quantitative and qualitative methods in the form of a pre-test, educational materials, live guided observation, and post-tests, the researchers found an increase in the nursing students’ ability to identify the role of the speech-language pathologist in a medical setting (knowledge). There was also an increase in the speech-language pathology students’ ability to understand how and when to communicate with nurses in a medical setting (knowledge).

Key Words: interprofessional education, speech-language pathology, nursing
Dedication

This research paper is dedicated to my research advisor, Dr. Kristy Weissling. Without her endless support and guidance, I would have never been able to complete this research project. Thank you for assisting me in every aspect of this research project, providing infinite feedback, and working with me the last two years. I greatly appreciate all the time and effort you put into this project to help it succeed.
Introduction

Speech-language pathologists (SLP) and nurses have been working together within healthcare institutions for decades. Whether it be in a hospital, skilled nursing facility, or outpatient treatment center (physician’s office, outpatient surgery), almost all individuals with speech, language, communication, and swallowing disorders will need healthcare services at some point in their lifetime. Without prior knowledge of speech-language pathologists and what services they provide, nurses may not be making the referrals and/or have the skills to serve these patients with communication and swallowing needs. According to the American Speech-Language-Hearing Association (2008), “There is a growing emphasis on interprofessional education in health care as a result of research demonstrating the benefits of interprofessional collaborations in health care that require continuous interaction, coordinated efforts, and knowledge sharing among health care professionals.” (para. 3). Continued research has shown the importance of interprofessional education (Thistlethwaite, 2012) (Reeves, 2016), and this research can be applied to the fields of speech-language pathology and nursing (Ghassemi & Fabus, 2017).

According to the World Health Organization (2011), “Collaborative practice happens when multiple health workers from different professional backgrounds work together with patients, families, careers and communities to deliver the highest quality of care. It allows health workers to engage any individual whose skills can help achieve local health goals” (p. 7). Due to an increase in the complexity and variety of patient’s health care concerns and needs, there is a growing demand for healthcare professionals to work together in a collaborative, team-based approach (Scott, 2016). Collaboration, communication, and a team-based approach are the building blocks of interprofessional education and are typically achieved in one of the following
ways: a) by changing the student’s perceptions of different healthcare professionals or b) focusing on increasing the student’s knowledge of other healthcare professionals (Thistlewaite, 2012).

Thistlewaite (2012) in a systematic review of the literature found that one of the better approaches to interprofessional education is to provide educational experiences for students who will be working together. This means that educational programs need to be established with the purpose of increasing the interprofessional relationship between professionals while they are still completing their education. When deciding on the content to be presented at educational experiences, Thistlewaite states that, “Defined learning outcomes for IEP [Interprofessional Education Program] should harness the power of the interaction and should be attainable only through an interprofessional mix (p. 62).” These experiences should be positive for all professionals involved and have an outcome that provides an increase in the participant’s knowledge and understanding of other professions. Common themes and outcomes that were found by Thistlewaite within the interprofessional education studies she reviewed included teamwork, roles and responsibilities, communication, how to reflect on one’s relationship within a team, and looking at interprofessional education from a patient’s perspective. Although there is no set standard on how to present these topics and create an educational program, there have been published studies on different educational programs that show an increase interprofessional knowledge outcomes between healthcare providers (Kowitlawakul et. al, 2017) (Thompson et. al, 2014). One very promising study by Thompson and colleagues (2014), which is applicable to this paper, included nursing students, speech-language pathology students, and students from eleven other medical disciplines.
Specifically, Britta Thompson and colleagues (2014) set up a three-year pilot interprofessional education program within their nursing program that included medical, dentistry, nursing, public health, pharmacy, physical therapy, occupational therapy, nutritional sciences, speech language pathology, and social work students. It focused mainly on changing each profession’s attitudes about interprofessional collaboration, the study utilized the Readiness for Interprofessional Learning Scale (RIPLS) and the TeamSTEPPS Teamwork Attitudes Questionnaire (T-TAQ), along with a healthcare professional circles diagrams (HPCD), for pre-, mid-, and post intervention data collection. The program was set up with eight clinical groups of ten students, with at least one student from each of the professions listed above (for a total of 80 students). Over the course of a year, these clinical groups completed four classroom-based learning sessions in the fall semester and four clinical patient sessions during the spring semester. Out of the 72 students whose data was usable, this study showed a small, but statistically significant increase from the pre- to post-interventions based on the RIPLS and T-TAQ assessment. The researchers also found, “Students significantly increased their inclusion of dentistry, public health, social work, and physician assistants as members of the healthcare team from pre- to post-intervention” (p. 1). Regarding the SLP and nursing collaborations, one of the main limitations of this study was that it only included 8 nursing students and 8 speech-language pathology students. The findings with these sixteen students were a 30% (70% to 100%) increase in the nursing participant’s ability to include SLPs on a combined healthcare team. For the SLP participants, there was no increase to include nurses on a combined healthcare team because they started at a baseline level of 100% inclusion (100% to 100%). Additionally, it also did not have an emphasis on increasing each profession’s knowledge about each other’s profession to create a
better understanding of how nursing and speech-language pathologists can work together within a treatment-based setting.

A study conducted by Akhtar Ghassemi and Renee Fabus in 2017 created an interprofessional education program for undergraduate and graduate speech-language pathology and nursing students. The program focuses directly on increasing the knowledge of both student populations about working with patients diagnosed with dysphagia, or swallowing disorders. The measures they used included taking an anonymous pre-test, listening to two one-hour lectures by faculty in the nursing and SLP programs, and then completing a post-test and course evaluation. The testing procedures consisted of ten questions related to the roles of nurses and SLPs in the intervention and assessment of dysphagia. Based on these testing procedures, the researchers found an increase in knowledge of their participants which supported the need for interprofessional education. One limitation of this study was that it focused solely on creating an education program about working with patients diagnosed with dysphagia and missed an opportunity to educate nursing students about how to work with a variety of patients with speech, language, communication, hearing, and swallowing disorders.

There is a limited amount of information within the literature regarding research and programs specifically addressing the interprofessional knowledge between speech-language pathologists and nurses. Although there are educational programs for speech-language pathologists and nursing students (Ghassemi & Fabus, 2017), they mainly focus on only specific disorders. Speech-language pathologists work with a variety of patients with speech, language, communication, and hearing disorders, and it is vital that nurses are also trained to work with these populations. The necessity for this type of training is needed to provide optimal patient care. McNeilly (2014) found that interprofessional education has been shown to improve patient care
by increasing efficiency, improving services, and reducing medical errors. To fill this void of a general interprofessional education program for speech-language pathology and nursing students, the researchers conducted two pilot studies.

The purpose of these studies was to increase the interprofessional knowledge between speech-language pathology students and nursing students regarding their fields using quantitative and qualitative measures during a three-hour, interactive learning session. The questions the researchers set out to answer include: 1) what information do nurses and speech-language pathologists need to know about each other’s fields to create the best healing environment, 2) how can this information be implemented into the program already incorporated at the Barkley Speech-Language and Hearing Clinic with Bryan College of Health Sciences’ nursing students, and 3) if students increase their knowledge to a greater extent give written vs. video instruction. A better understanding of the roles of speech-language pathologists and nurses on a medical team will create a better healing environment for patients and the need for interprofessional education facilitates the knowledge base between the two professions (McNeilly, 2014).

**Methods**

This research study was a quasi-experimental, within-group study that consisted of two different pilot groups utilizing both qualitative and quantitative measures. The first pilot occurred during the Fall 2016 and Spring 2017 academic year and the second pilot occurred during the Fall 2017 and Spring 2018 academic year.

**Participants**

**Pilot 1.**
Participants for this study were nursing students in their first semester of their Junior, or third, year of undergraduate training at Bryan College of Health Sciences located in Lincoln, NE. A total of 47 nursing students completed the first pilot of this project, with 94% of those participants being female and 6% were male. All participants spoke English and were over the age of 19. There were no known academic or learning disabilities within the population, and all participants completed the testing procedures in the same manner. The participants were selected by their instructors at Bryan College of Health Sciences to attend a clinical observational experience at the University of Nebraska – Lincoln’s (UNL) Barkley Speech Language and Hearing Center located in Lincoln, NE, based on academic standards mandated by their undergraduate institution. IRB approval was obtained for this study. Each participant signed and read a consent form that allowed their data from testing measures to be used and reported for this research study.

**Pilot 2.**

The participants of the second pilot consisted of both undergraduate nursing and speech-language pathology students. The 48 nursing students who participated in this study were first semester Juniors, or third-year students, at Bryan College of Health Sciences. Out of the 48 nursing students, 96% were female and 4% were male. All nursing students were selected by their instructors at Bryan College of Health Sciences to attend a clinical observational experience at UNL’s Barkley Speech Language and Hearing Clinic based on academic standards mandated by their undergraduate institution. The undergraduate speech-language pathology students were in their first, second, or third year of undergraduate training at UNL. Speech-language pathology students were recruited through posters and short informational presentations during classes within UNL’s Communication Sciences and Disorders’ undergraduate program. A total of 20
speech-language pathology students participated, and 90% of them were female while 10% were male. All participants were over the age of 19 and spoke English. There were no known academic or learning disabilities, and each participant completed their assigned tasks without additional assistance. Each participant read and signed a consent form that allowed their data from testing measures to be used and reported for this research study.

Materials

The measurement instruments used to collect both qualitative and quantitative data within both pilots of this study consisted of a pre-test, education hand-out, and post-tests. For the first pilot, the researchers collected data using a pre-test, an educational handout, initial post-test, and an additional post-test. The pre-test, located in Appendix A, consisted of a consent form and eight qualitative, multiple choice questions based on information presented in the educational handout. The post-test, found in Appendix B, also contained eight multiple choice questions, a Likert-Scale asking the participants to rate the experience, and two open-ended questions. The educational hand-out, located in Appendix C, included the following topics:

- Definition of a Speech-Language Pathologist, including their roles in health care.
- Settings of Employment for Speech-Language Pathologists.
- Definition of an Audiologist, including their roles in health care.
- Settings of Employment for Audiologists.
- Importance of Inter-Professional Education.
- Patient Strategies for Individuals with Hearing Aids.
- Patient Strategies for Individuals with AAC Devices.
- Patient Strategies for Individuals with Translators.
- Patient Strategies for Individuals with Unknown Communication Disorders.
- Patient-Provider Communication, Importance, and Examples.
- Basic Patient Communication Tips (Maintaining Eye Contact, Slowing Down and Articulating, Using Simple Vocabulary).
It was presented to the participants in written, paper format for the first pilot and a combination of paper and video format for the second pilot.

After the first pilot, the researchers performed a peer-reviewed validity measure of the educational hand-out. A survey which contained the educational hand-out topics listed above were sent to practicing speech-language pathologists across the United States. Participants were asked to rank the topics on a Likert-Scale. They were also asked to answer two qualitative questions regarding topics they believed were very important and important to emphasize during the inter-professional education of nursing students. After analyzing the results, the educational hand-out was revised for pilot two to include the definition of dysphagia, common causes of dysphagia, and symptoms of dysphagia.

A second post-test was sent to nursing students in pilot one and both nursing and SLP students in pilot two as a test-retest reliability measure using the survey software Qualtrics. It consisted of 4, multiple choice questions that were also located on the pre-test and post-test. Two qualitative questions and a Likert-scale were also included in the second post-test. It was sent to participants approximately 1-3 months after the participants took part in this research project to see if any information was retained after the initial contact with the participants.

Bryan College of Health Sciences also created a pre-test, educational hand-out, and two post-tests for the speech-language pathology participants in a similar format as the materials the researchers created for the second pilot. The topics on their educational handout included:

- Definition of Registered Nurses, including their role in health care.
- Importance of Interprofessional Education.
- Patient-Centered Care
- Patient Advocacy and Importance.
- The TeamSTEPPS Approach to Interprofessional Communication.
Procedures

The participants attended a three-hour observational experience at the Barkley Speech-Language and Hearing Clinic. A maximum of four students (two nursing and two SLP) participated in this project at a time. All participants watched approximately 2.5 hours of live and pre-recorded treatment sessions for clients with speech, language, communication, and swallowing disorders. These treatments sessions included both adult and child patients and lasted between 20-60 minutes.

Pilot 1.

For both the Fall and Spring semester, the participants were greeted by the student researcher and immediately asked if they wanted to participate in a research study. Participants who agreed to participate signed a consent form located on the pre-test in a quiet room. They then completed the pre-test, then were given time to read the educational hand-out. The student researcher then led the participants to three observational sessions. Afterward, students were directed to a quiet room to complete the post-test. At the bottom of the post-test, an additional consent was presented to participants asking if they were willing to receive a follow-up survey and a request to provide their email addresses. For those who agreed to receive the additional survey, the second post-test was sent at the end of each semester, which equated to approximately 2 weeks to 3 months after participants took part in the research project.

Pilot 2.

In the Fall semester, speech-language pathology students in groups of two (for a total of four students) completed the activity with the nursing students. A short discussion facilitated by the student researcher was conducted between the two professions after they read their educational handout. To make the time in between the observational activity and second post-test
more standardized, the second post-test was sent precisely six weeks from each participant’s date of participation. In the spring semester, an educational video was presented to the nursing students in place of the paper educational hand-out to evaluate if a different form of presentation would be more effective. Otherwise than this change to educational presentation for nursing students, the same operational procedures in Pilot 1 were used for all participants in Pilot 2.

**Data Coding and Analysis**

All participants’ responses were collected and scored or analyzed for common themes. The participant’s personal information was protected by coding their names before documenting their results. The pre-test and both post-tests were scored based on the number of correct items. All Likert-scale items were recorded based on the participant’s response. For qualitative answers, the researchers looked for common themes by taking common words (such as a, and, the) out of the participant’s responses and then analyzing their responses by looking for similar semantics (ideas) across participants.

**Results**

The participants’ results were analyzed utilizing both quantitative and qualitative measures. The quantitative measures that were employed included the participant’s pre-test and post-test scores. Qualitative measures included participants’ Likert-scale ratings and responses to these two questions:

- What new information or concepts did you learn through this activity?
- What information, if any, did you know prior to this activity regarding the nursing/speech-language pathology profession?

**Pilot 1**

The researchers sought to discover the effectiveness of the educational materials on improving the knowledge of nursing students regarding the field of speech-language pathology.
in the first pilot. From August 2016 to April 2017, the nursing students’ (n= 47) raw scores were computed to find an average test scores for both the pre-test and post-test, rounded to the nearest tenths place, and then converted into a percentile. The average score for the pre-test was 86.0% and 98% for the post-test. The second post-test was sent to the 32 participants who agreed to receive an addition post-test. Out of the 32 participants who agreed, only 7 completed the testing measure resulting in a 21% return rate and average score of 89.3% (Fig. 1). The statistical significance was determined using a one-tailed, t-test for dependent measures and yielded a p-value of 0.0001 as seen in Figure 3.

For qualitative analysis, Like-scale items and analysis of the prompts, listed above, were analyzed by the researchers. Likert-scale responses were collected and the percentage for each response was calculated. The scale was a five-point scale with zero being not beneficial or informative at all to a five being extremely beneficial and informative (Fig. 2). The average rating of the participants was a 4.67. Analysis of the first prompt, listed above, provided common themes such as how to communicate with patients, learning about the different types of disorders speech-language pathologists treat, and different techniques SLPs use with patients during therapy sessions. The second qualitative prompt was used to gauge the knowledge students already had regarding the field of speech-language pathology and yielded responses that varied from not having any knowledge to having some knowledge through personal experiences and prior course work. Sample responses that correspond to the main themes found from the prompts can be found in Figure 4.
Figure 1: A bar chart showing the percentage of participants' responses.

Figure 2: A pie chart depicting participant responses with different ratings.

Figure 3:

<table>
<thead>
<tr>
<th></th>
<th>Standard Deviation</th>
<th>P-Value</th>
<th>T - Value</th>
<th>Standard Error of Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>12.93</td>
<td>0.0001</td>
<td>5.99</td>
<td>2.01</td>
</tr>
<tr>
<td>Post-Test</td>
<td>4.79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4:

Prompt #1: What new information or concepts did you learn through this activity?

<table>
<thead>
<tr>
<th>Theme</th>
<th>Example*</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to Communicate with Patients</td>
<td>“I learned a lot about different tools to communicate with clients who may have a barrier to communicate.”</td>
</tr>
<tr>
<td>Different Types of Disorders SLPs Treat</td>
<td>“I didn't know that SLP work with swallowing disorders!”</td>
</tr>
</tbody>
</table>
**Different Techniques SLPs Use with Patients**

“Different techniques when working with a child who has a speech disorder.”

<table>
<thead>
<tr>
<th>Prompt # 2</th>
<th>What information, if any, did you know prior to this activity regarding the speech-language pathology profession?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No Previous Knowledge</strong></td>
<td>“I did not have any prior information.”</td>
</tr>
<tr>
<td><strong>Some Previous Knowledge</strong></td>
<td>“During clinical some of my patients have had speech pathologists come do tests on swallowing, so I knew they helped with that and speech problems.”</td>
</tr>
</tbody>
</table>

* Participants’ responses were not corrected for grammatical or spelling errors.

**Pilot 2**

For the second pilot, the researchers sought to determine whether an educational handout or educational video segment was more effective at increasing the knowledge of the nursing students about the field of speech-language pathology. In the time period from August 2017 to April 2018, the year was split into the Fall and Spring Semesters. The educational handout was used for the first semester and was compared to the video handout in the second semester. For the quantitative data collected, the nursing students’ raw scores (n=54, 32 in the Fall Semester and 22 in the Spring Semester) for both the pre-test and the post-test were computed to find the average score based on the treatment type (educational handout vs. educational video). The results for the educational handout were an average pre-test score of 73.4% and an average post-
test score of 96.1%. Average pre-test and post-test scores for the video handout were 72.7% and 90.0% respectively (Fig. 5). There were 32 of the 54 participant who agreed to take the additional post test, and two surveys were collected for a return rate of 6.2%. The average score on the two post-tests was 87.5%. The statistical significance of the nursing students’ pre-test and post-test data was tested using a two-tailed, paired t-test (Fig. 7) with a generated p-value of 0.0001 for the educational handout scores and 0.00048 for video handout scores.

The second pilot for the nursing students also produced qualitative data that was analyzed by the researchers. The nursing students’ Likert-scale responses, the frequency that the response occurred (zero being not beneficial or informative at all to 5 being extremely beneficial and informative) was gathered for both semesters with the average response being a rating of 4.51 (Fig. 6). The results from the first prompt, listed above, for both semesters yielded the common themes of learning how to communicate with patients, increasing their knowledge about swallowing disorders, and learning about the field of the speech-language pathology for the first prompt. For the second prompt, the participants’ responses ranged from having no previous knowledge to having some previous knowledge based on personal and work experiences (Fig. 8).
Figure 7:

<table>
<thead>
<tr>
<th></th>
<th>Standard Deviation</th>
<th>P-Value</th>
<th>T-Value</th>
<th>Standard Error of Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handout Pre-Test</td>
<td>12.99</td>
<td>0.0001</td>
<td>9.67</td>
<td>2.34</td>
</tr>
<tr>
<td>Handout Post-Test</td>
<td>5.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Pre-Test</td>
<td>11.51</td>
<td>0.00048</td>
<td>5.33</td>
<td>2.99</td>
</tr>
<tr>
<td>Video Post-Test</td>
<td>13.16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 8:

<table>
<thead>
<tr>
<th>Prompt #1: What new information or concepts did you learn through this activity?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme</strong></td>
</tr>
<tr>
<td>How to Communicate with Patients</td>
</tr>
<tr>
<td>Increasing Knowledge of Swallowing Disorders</td>
</tr>
<tr>
<td>Learning About the Field of Speech-Language Pathology</td>
</tr>
<tr>
<td>Example*</td>
</tr>
<tr>
<td>“How to communicate with clients who have different learning/talking disorders.”</td>
</tr>
<tr>
<td>“The difference between aphasia and dysphagia.”</td>
</tr>
<tr>
<td>“I learned how to interact with speech pathology and why we need them.”</td>
</tr>
</tbody>
</table>

Prompt #2: What information, if any, did you know prior to this activity regarding the speech-language pathology profession?
<table>
<thead>
<tr>
<th>No Previous Knowledge</th>
<th>“I didn't know much about any professions. I had only heard of SLP.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some Previous Knowledge</td>
<td>“The basics of what they do. Seen them in clinical settings before.”</td>
</tr>
</tbody>
</table>

* Participants’ responses were not corrected for grammatical or spelling errors.

The SLP students’ (n=20) raw pre-test and post-test scores were also evaluated to find the average score on their pre- and post-test (Fig. 8). The authors found that the average pre-test score was 84.0% and the average post-test score was 94.0%. For the additional post-test, 15 SLP students agreed to receive the testing measure and only 40% completed it with an average score of 100%. The statistical significance of the SLP pre-test and post-test data was computed using a one-tail, paired t-test for dependent measures and provided a p-value of 0.0001 (Fig. 11). Likert Scale responses for the SLP students’ answers were computed in Figure 10 to show the frequency of each response. The average rating for the SLP students was 4.35. Common themes found for the prompts listed below in Figure 12 included how SLPs and nurses can work together, how to communicate with nurses, and about the variety of disorders observed. For the SLP students’ previous knowledge regarding the field of nursing, the responses ranged from having no prior knowledge to having a significant amount due to personal experiences.
Figure 9:

![Bar graph showing percentage](image)

Figure 10:

![Pie chart showing participant responses](image)

Figure 11:

<table>
<thead>
<tr>
<th></th>
<th>Standard Deviation</th>
<th>P-Value</th>
<th>T-Value</th>
<th>Standard Error of Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>12.23</td>
<td>0.0001</td>
<td>5.96</td>
<td>1.70</td>
</tr>
<tr>
<td>Post-Test</td>
<td>8.49</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 12:

Prompt #1: What new information or concepts did you learn through this activity?

<table>
<thead>
<tr>
<th>Theme</th>
<th>Example*</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>How SLPs and Nurses Work Together</em></td>
<td>“Developing a relationship with nurses as an SLP is extremely important in patient care.”</td>
</tr>
</tbody>
</table>
How to Communicate with Nurses

“How to and when to contact/ask for help from a nurse.”

Variety of Disorders Observed

“Seeing people with various speech difficulties, observing the different techniques and methods for working on improving development.”

Prompt # 2: What information, if any, did you know prior to this activity regarding the nursing profession?

No Previous Knowledge

“Almost none, if any.”

Significant Amount of Knowledge

“RN services, interprofessional collaboration skills, patient centered care. (I took/have my CNA License).”

* Participants’ responses were not corrected for grammatical or spelling errors.

Discussion

The researchers found an improvement in the nursing students’ ability to identify the role of the speech-language pathologist within a medical setting in both pilot studies. In Pilot 1, there was a 12 percentage point increase from the post-test to the pre-test. This descriptive statistic was analyzed using a one-tailed, t-test for independent measures and a significant difference was found. In Pilot 2, we found that the nursing students had greater knowledge increases when using the educational hand-out, with a 22.7 percentage point difference between pre-test and post-test,
in comparison to the video format which only had a 17.3 percentage point difference. A possible reason for this may have been the length of the video, which was approximately seven minutes. In the seven minutes the attention of the participants may have waned. Although the paper version of the educational handout provided better results, the scores for both of the educational handout and the video were statistically significant based on a two-tailed t-test for dependent measures. Additionally, in the second pilot study, the speech-language pathology students demonstrated an improvement in their knowledge regarding the nursing profession with a ten percentage point increase from the pre-test to the post-test. This descriptive percentage difference was significant when a t-test analysis was performed with the data.

Qualitative analysis of the prompts listed in the results section of this paper for both pilot studies revealed improvement in the nursing student’s perception of their ability to communicate with patients, and a self-reported increase in their knowledge of dysphagia. For the SLP student’s, the responses revealed an increase in confidence regarding their ability to communicate with nurses and increased knowledge regarding how SLPs and nurses can work to help patients. These results aligned with the researcher’s goal to improve the interprofessional relationship and knowledge between nurses and speech-language pathologists. The outcomes from this interprofessional interaction between nurses and SLPs were also consistent with the findings by Ghassemi and Fabus (2017).

Limitations

One limitation of this project was that there was no control group. The nature of this project as primarily a learning experience for nurses and SLP’s, made it not feasible to withhold students from the experiences they would likely benefit from. Within the project design, another limitation was that each participant was exposed to a different set of observations. The
observations the participants saw may have affected the results of the post-test. For example, if a student observed a dysphagia or AAC observation, they may have performed better on questions related to those categories compared to students who did not view those sessions.

Another limitation of this study was previous knowledge of nursing and speech pathology. For the nursing students, some completed clinical experiences with speech-language pathologists before participating in this research project. Most of the SLP students also had observed or interacted with a nurse before engaging in this project. This limitation led to the researchers creating knowledge objectives for nursing students and speech-language pathology students that may have been too simple for the participants based on their previous exposure/experiences. Although the pre-test, educational hand-out, and post-test were revised multiple times to include more challenging questions to accommodate this limitation, this might have affected the results of this study.

The final limitations of this study were the low return rate for follow-up questions in both pilots. Although over half of both student populations agreed to take the post-test, very few participants completed this measure. This measure was also implemented as a means for test-retest reliability, and due to the low return rate of the results, we do not feel it was representative of the knowledge the participants gained from this experience.

**Future Directions and Clinical Implications**

The researchers plan to continue this project by educating prospective nursing students with the educational materials to collect maintenance data. In the future, we would also like to implement a standardized interprofessional measure, such as the Readiness for Interprofessional Learning Scale (RIPLS) (Thompson et. al, 2014). For the speech-language pathology students, the plan is to continue to develop the educational handout and the information regarding the
nursing profession that is presented to them. This will be carried out in the form of increasing the difficulty of both pre- and post-test and reevaluating the content of the educational handout. The research team’s goal is to continue this research line to increase the quality and efficiency of interprofessional education programs between nursing and speech-language pathology professions to promote better patient health outcomes.
References


Appendix A – Pre-Test

Barkley Speech Language and Hearing Clinic Learning Activity Consent Form and Pre-Test

Fall 2017

Your coming to the Barkley Speech Language and Hearing Clinic on UNL’s East Campus and participating in this activity is a beneficial experience for not only you, but future students. It is important for us to evaluate your visit and the learning objectives of this experience. A UNL student would like to observe participant’s retained knowledge from this activity, and see what could be improved in the future as a research project. The benefits of this project include improving the inter-professional relationship between speech-language pathologists and nurses, along with optimizing the current nursing activity between Barkley Speech Language and Hearing Clinic and Bryan College of Health Sciences. There are no known risks associated with this research project. Information from this research project will be used for educational purposes, will be compiled to look at means and differences, and may be presented at conferences/written up as an article in a speech-pathology or educational journal or magazine. The Pre-Test, Post-Test, and Evaluation consist of less than ten questions, and should take no longer than 10-15 minutes to complete. However, your personal information will not be shared with any individuals not related to this research project. How well you do on the Pre- and Post-test will also not reflect your actual grade in any courses associated with this activity. Participation is also voluntary, and refusal to participate or discontinue participation will involve no penalty or impact on your relationship with the University of Nebraska- Lincoln or Bryan College of Health Sciences. You must be 19 years of age or older to participate in this research project. There are no known risks associated with this research project. If you have any questions about research subject’s rights or to report a problem, you may do so with the following e-mail address: irs@unl.edu. If you would like to contact the investigators of this study for additional questions, you can do so with the following e-mail addresses: chaming2013@gmail.com or kristy.weissling@unl.edu. By filling out the Pre- and Post-test, you are willing to participate in this research project.

Name: ___________________________ Date: ________________

Please answer the following questions by selecting the best answer and writing it on the line provided.

1. Speech Language Pathologists (SLPs) provide services related to:
   A. Communication, language, and speech disorders.
   B. Hearing and balance disorders.
   C. Improving individuals’ efficiency in speaking the English language.
   D. Communication, language, speech, and swallowing disorders.

2. Inter-professional education is important because:
   A. It increases efficiency, improves services, and reduces medical errors.
   B. It reduces the need for patient provider communication.
3. You are treating a patient with a common cold. You have seen this patient a couple of times and know she needs a hearing aid to properly hear. As you are giving patient care instructions, you notice that her hearing aid is not in her ear but is in the bag she brought along with her. The best practice would be:
   A. Continue to give patient care instructions. It is the patient's responsibility to have their hearing aids in and on at certain times.
   B. Pay attention to her body language. If she appears to be processing the information you are giving her, continue to give instructions. If not, gain his full attention and re-state your instructions from the beginning.
   C. Stop giving instructions immediately. Ask the patient if her hearing aid is with her, and then encourage her to put them in and turn them on. Then re-state your instructions from the beginning.

4. Common causes of dysphagia include all of the following except:
   A. Decaying or missing teeth.
   B. Strokes and brain injuries.
   C. Difficulty speaking or jumbled speech.

5. Speech Language Pathologists (SLP) and Audiologists should be contacted:
   A. Only when a nurse cannot hear or understand what a patient is saying.
   B. Whenever a nurse is unsure of how to communicate with a patient or thinks the patient is not hearing them.
   C. Nurses should never have to contact a SLP or Audiologist, the primary physician will order a consult if one is needed.

6. Patient Provider Communication (PPC) is:
   A. A state of understanding between a health care provider and patient when joint meaning is established.
   B. When nurses instruct patients about care procedures and instructions.
   C. Is established whenever health care providers communicate with their patients.

7. You are working in an acute rehabilitation facility. The patient you are working with is having swallowing difficulties, and is at risk for developing pneumonia. As a nurse, you should:
   A. Contact the dietary department to see if they have any suggestions to help the patient swallow.
   B. Record the problem and report it to the patient’s SLP the next time you see or talk to her.
   C. Record the problem according to your facility’s policies as soon as possible.

8. Audiologists provide services related to:
   A. Hearing and balance disorders.
   B. Hearing and cerumen removal.
   C. Treatment of ear related diseases.
Appendix B - Post-Test

Barkley Speech Language and Hearing Clinic
Learning Activity Post-Test

Fall 2017

Name: ___________________________ Date: ________________

Please answer the following questions by selecting the best answer and writing it on the line provided.

_____1. Speech Language Pathologists (SLPs) provide services related to:
   A. Communication, language, and speech disorders.
   B. Hearing and balance disorders.
   C. Improving individuals’ efficiency in speaking the English language.
   D. Communication, language, speech, and swallowing disorders.

_____2. Inter-professional education is important because:
   A. It increases efficiency, improves services, and reduces medical errors.
   B. It reduces the need for patient provider communication.
   C. It decreases the chance of serving individuals with communication and/or hearing impairments in a medical setting.

_____3. You are treating a patient with a common cold. You have seen this patient a couple of times and know she needs a hearing aid to properly hear. As you are giving patient care instructions, you notice that her hearing aid is not in her ear but is in the bag she brought along with her. The best practice would be:
   A. Continue to give patient care instructions. It is the patient’s responsibility to have their hearing aids in and on at certain times.
   B. Pay attention to her body language. If she appears to be processing the information you are giving her, continue to give instructions. If not, gain his full attention and re-state your instructions from the beginning.
   C. Stop giving instructions immediately. Ask the patient if her hearing aid is with her, and then encourage her to put them in and turn them on. Then re-state your instructions from the beginning.

_____4. Common causes of dysphasia include all of the following except:
   A. Decaying or missing teeth.
   B. Strokes and brain injuries.
   C. Difficulty speaking or jumbled speech.
5. Speech Language Pathologists (SLP) and Audiologists should be contacted:
   A. Only when a nurse cannot hear or or understand what a patient is saying.
   B. Whenever a nurse is unsure of how to communicate with a patient or thinks the patient is not hearing them.
   C. Nurses should never have to contact a SLP or Audiologist, the primary physician will order a consult if one is needed.

6. Patient Provider Communication (PPC) is:
   A. A state of understanding between a health care provider and patient when joint meaning is established.
   B. When nurses instruct patients about care procedures and instructions.
   C. Established whenever health care providers communicate with their patients.

7. You are working in an acute rehabilitation facility. The patient you are working with is having swallowing difficulties, and is at risk for developing pneumonia. As a nurse, you should:
   A. Contact the dietary department to see if they have any suggestions to help the patient swallow.
   B. Record the problem and report it to the patient’s SLP the next time you see or talk to her.
   C. Record the problem according to your facility’s policies as soon as possible.

8. Audiologists provide services related to:
   A. Hearing and balance disorders.
   B. Hearing and cerumen removal.
   C. Treatment of ear related diseases.

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How would you rate this experience and activity? (With 0 not being beneficial or informative at all, to 5 being extremely beneficial and informative). Please circle your response.

0  1  2  3  4  5

What new information or concepts did you learn through this activity?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

What information, if any, did you know prior to this activity regarding speech-language pathology, audiology, and the professions associated with each field?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Would you be willing to be contacted at the end of the semester for a short additional questionnaire and some survey questions?

______ Yes, my preferred email is: ____________________________________________

______ No, I would not like to be contacted at a later time in the semester.
### Appendix C - Educational Hand-out

**Barkley Speech Language and Hearing Clinic Learning Activity Handout**

**Fall 2017**

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#### Speech Language Pathology and Audiology

**Speech Language Pathologist (SLP):** Professionals who provide a assortment of services related to communicative, language, speech, and swallowing disorders in spoken, written, drawing and manual form. This includes identifying, assessing, treating, and preventing communication disorders, both receptive (receiving information, including memory impairments) and expressively (sharing information, including word order and speech sounds). SLP's work in a variety of settings including school, medical facilities, private practices, rehabilitation facilities, skilled nursing facilities, and universities.

**Audiologist (AUD):** Specialists who measure hearing ability and identify, assess, manage, and prevent disorders of hearing and balance. This includes balance disorders (dizziness, unsteadiness, feelings of floating or spinning) and complications of information related to hearing. Audiologists typically work in hospitals, private practices, schools, and universities, and also provide consultations in long-term facilities and residential health facilities.

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#### Patient Strategies

When interacting with a patient, be aware of how they receive the information they are given and how they express what they are trying to communicate at all stages of care. Some people may utilize the following systems:

- **Hearing Aids:** If a patient you are caring for wears any type of device that is used to enhance hearing, make sure the device is in use during any type of communication with the patient. This includes during the provision of care instructions and patient care procedures. Having their hearing device (aid) in place ensures that the person is hearing what you are trying to tell them to the best of their ability. Batteries are a common reason hearing aids do not work. If you don’t know how to change a battery, consult and audiologist or SLP for training. A patient who does not hear instructions or understand procedures because they did not hear them is at risk for a health-related complication.

- **Augmentative/Alternative Communication (AAC) Systems:** AAC systems include any system (computers, iPads, picture boards, spelling boards, communication books, gestures, and/or writing/drawing) used to compensate for communication impairments, activity limitations, and/or limitations that affect the individual's participation in daily tasks. If a patient you are caring for has an AAC system, it needs to be used during any type of communication with that patient. You may also need to write on a piece of paper, draw pictures, or gesture to relay information to the patient as they may have difficulty understanding your message as well as conveying it. This does not mean they aren’t intelligent; they just need extra time and support to process information.

- **Other:** If you are unsure how to communicate with a patient for whom you are caring for, or do not seem to be efficiently communicating with a patient, seek assistance from the patient’s parents, family, friend, or caregiver that serves as a communication intermediary. If needed, follow your facility’s procedures to get a speech-language pathology or audiology consultation.

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### Why is this activity important?

The individuals you observe today WILL need medical attention in the future. Whether that is for a health check-up, or a more serious medical emergency, it is important that you know how to communicate with patients who have a communication and/or hearing impairment.

Inter-professional education has been shown to improve patient care by increasing efficiency, improving services, and reducing medical errors. This creates a better healing environment for future patients you may be caring for and improves patient provider communication.

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**Patient Provider Communication (PPC)**

Patient Provider Communication (PPC) is a state of understanding between a health care provider and patient when joint meaning is established. This meaning gives the patient complete, accurate, and timely information. When PPC is established, it improves health outcomes for the patient.

Patients who are unable to communicate with their caregiver(s) report feelings of frustration, panic, anxiety, dehumanization, and sleepiness.

Patients who are unable to receive information due to a hearing or receptive communication disorder can possibly develop feelings of confusion and misunderstanding, leading to poorer health outcomes.

What can happen when PPC is not successfully established?

- A patient, who is non-speaking, may be diagnosed incorrectly because they were unable to communicate with their health care provider about their health care status (e.g., where the pain is, when symptoms actually started, etc.). This lack of PPC can result in a medical error that could be significant.
- A patient without the ability to speak may have had concerns about an upcoming health procedure, but was not able to vocalize their concern before the procedure. Without PPC in this situation, the patient may have feelings of stress and uncertainty.
- A patient with a hearing impairment may be re-admitted to a health facility because they did not fully hear and understand at-home patient care instructions when they were released from their previous facility. This patient may need to receive additional medical care and be re-admitted because PPC was not established.

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**Dysphagia**

Dysphagia is a swallowing disorder that can be caused by brain injuries, strokes, damage to the nervous systems, decaying or missing teeth, poorly fitted dentures, and cancer or injury to the mouth, throat, head, or neck. Common symptoms include:

- Aspiration, difficulty eating and swallowing, recurring pneumonia or chest congestion, and weight loss or dehydration from not being able to eat and swallow.

If you notice a patient with any of these symptoms, please document the symptom and report them according to your facility’s policies.

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**Communication Tips**

Here are a few tips to optimize communication with patients:

- **Maintain Eye Contact** — When communicating with a patient, try to maintain eye contact throughout the conversation. This demonstrates your interest, provides a visual model to follow (lips), and demonstrates your attention to their care.

- **Slow Down and Articulate** — Speaking slowly and making sure to really articulate words makes it easier for people to understand and process the message you are communicating to them. Be careful not to over articulate or use extremely exaggerated speaking rate/articulation as this may actually make it harder to understand. Use a SLOW and natural rate with good annunciation.

- **Use Simple Vocabulary** — When discussing medical terms and procedures with patients, try to use simpler vocabulary whenever possible. For example, instead of saying, "You have hypertension and should take medications as directed by your doctor," you might present this as, "You have high blood pressure, take your medication twice a day. You should take your medication just like it says on the bottle." Then proceed to explain to the patient in the simplest terms what they need to do until you feel the person truly understands the instructions.

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