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Initial Feasibility and Efficacy of an Interprofessional Education Pilot Program

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East Tennessee State University (ETSU) is a regional university with 15,000+ students. It includes an Academic Health Sciences Center (AHSC) with an approximate total number of students of 4,250, which includes the Colleges of Clinical and Rehabilitative Health Sciences, Medicine, Nursing, Pharmacy, and Public Health. In January of 2011, a retreat of all deans and associate deans of the Academic Health Sciences Center as well as the Vice President for Health Affairs was held to expand interprofessional offerings at ETSU. A major obstacle identified at that retreat for implementation of an expanded, formal interprofessional education (IPE) experience was scheduling issues related to varying curricular and organizational issues within each of the five colleges of the AHSC. This obstacle would influence the formation of an extra-curricular structure by which the new IPE experience, described in detail below, would be formed.

Several months prior to the first retreat of all deans, associate deans, and the Vice President for Health Affairs, a seminal article was published in the *Lancet* by Dr. Julio Frenk and colleagues (2010) titled, "Health professionals for a newcentury: transforming education to strengthen health systems in an interdependent world." This timely article provided a foundational influence on the formation of the IPE experience at ETSU. In that article, Dr. Frenk suggested three levels of learning to be considered when designing IPE experiences: informative, formative, and transformative. The objectives within informative experiences include information and skill acquisition; within formative experiences include socialization and awareness of values; within transformative experiences include obtainment of leadership attributes. The projected outcomes for informative, formative, and transformative experiences were becoming experts, professionals, and change agents, respectively.

Prior to a second administrative IPE retreat with all deans, associate deans and the Vice President for Health Affairs in July 2011, a second seminal publication was released: *Core Competencies for Interprofessional Collaborative Practice* by the Interprofessional Education Collaborative (IPEC, 2011). IPEC was made up of representatives from national educational organizations from dental, nursing, allopathic and osteopathic medicine, pharmacy, and public health. It is within this document that the IPEC put forth the four competency domains of IPE (Values & Ethics for Interprofessional Practice, Roles/Responsibilities, Interprofessional Communication, and Teams and Teamwork) as well as learning objectives and suggested learning activities to be considered in each of the four competency domains. These two publications (Frenk et al. and IPEC) helped to form the foundational structure that would become the IPE experience at ETSU. The experience was designed to be longitudinal over a 2-year period of time and having three phases of engagement: prologue (informational), experiences (formational), and capstone (transformational) (see Figure 1).

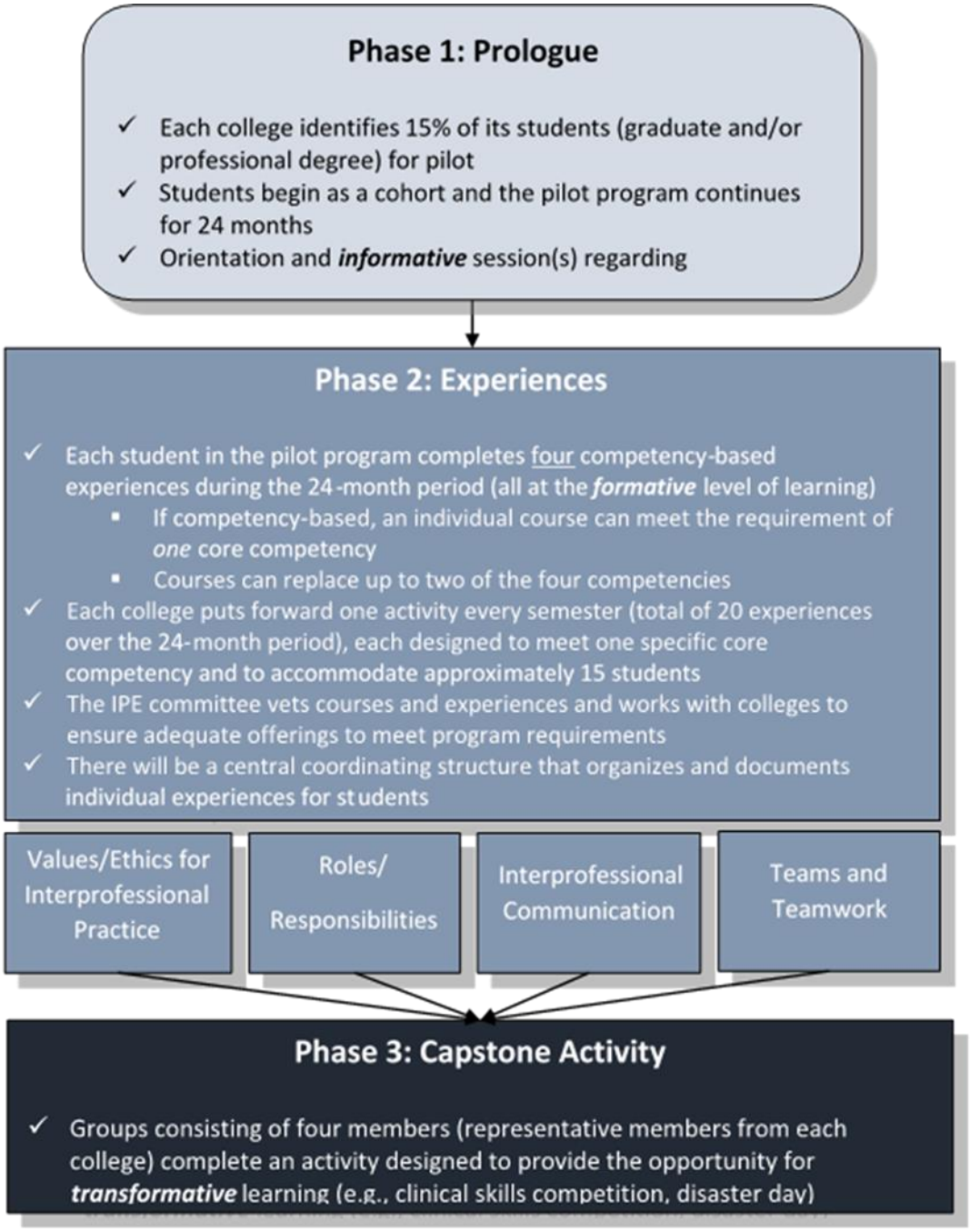


Figure 1. ETSU Interprofessional Education Pilot Program (IPEP) Structure

In 2012, the ETSU Interprofessional Education Committee (ETSU-IPEC) was formed to begin planning an IPE pilot program (IPEP). The first IPEP cohort began in the fall semester of 2012 with each of the colleges along with the Department of Psychology identifying approximately 10% of its students to participate; a second, slightly larger cohort of students (approximately 25% of students from each of the colleges/departments) was recruited in fall 2013. With the need for an extra-curricular structure for IPEP, it was agreed that all three phases of the program would operate outside of all current curricular structures. The exception to this was the use of

existing courses within current curricula that were designated as interprofessional (more information on courses can be found under the 'Experiences' heading below). To encourage the interaction of professional students beyond what would have been within their given curriculum, no more than two courses were permitted to count toward completion of IPEP. Finally, to respect the need for IPEP to be extra-curricular in nature, it was agreed that the prologue and Capstone experiences would be completed on strategically scheduled Saturdays respecting student curricular issues. Experiences within phase two of IPEP were either accomplished through pre-existing courses or created activities (more information on activities can be found under the 'Experiences' heading below) that met at times respectful of curricular structures (often early evening scheduling was utilized).

Prologue (Phase 1)

The IPEP Prologue was created to engage the interprofessional learners at the informative level of learning. The World Health Organization's (2010) definition of Interprofessional Education – "When students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" – was considered central to the creation of the Prologue. The goal of the prologue experience was to bring together interprofessional students from five colleges within the ETSU AHSC, as well as the Department of Psychology, to engage in an introduction to IPE and to learn about, from and with each other.

The prologue schedule can be seen to the right of this paragraph. In keeping with the extra-curricular strategy of IPEP, this all-day event was held early in the fall semester on a Saturday. In preparation for the Prologue experience, students were required to read *The Five Dysfunctions of a Team* (Lencioni, 2002) as well as view a webcast by Julio Frenk outlining his article published in *Lancet* in 2010. It was hoped this preliminary work would set the stage for the prologue experience and provide some important background information on the importance of the IPE.

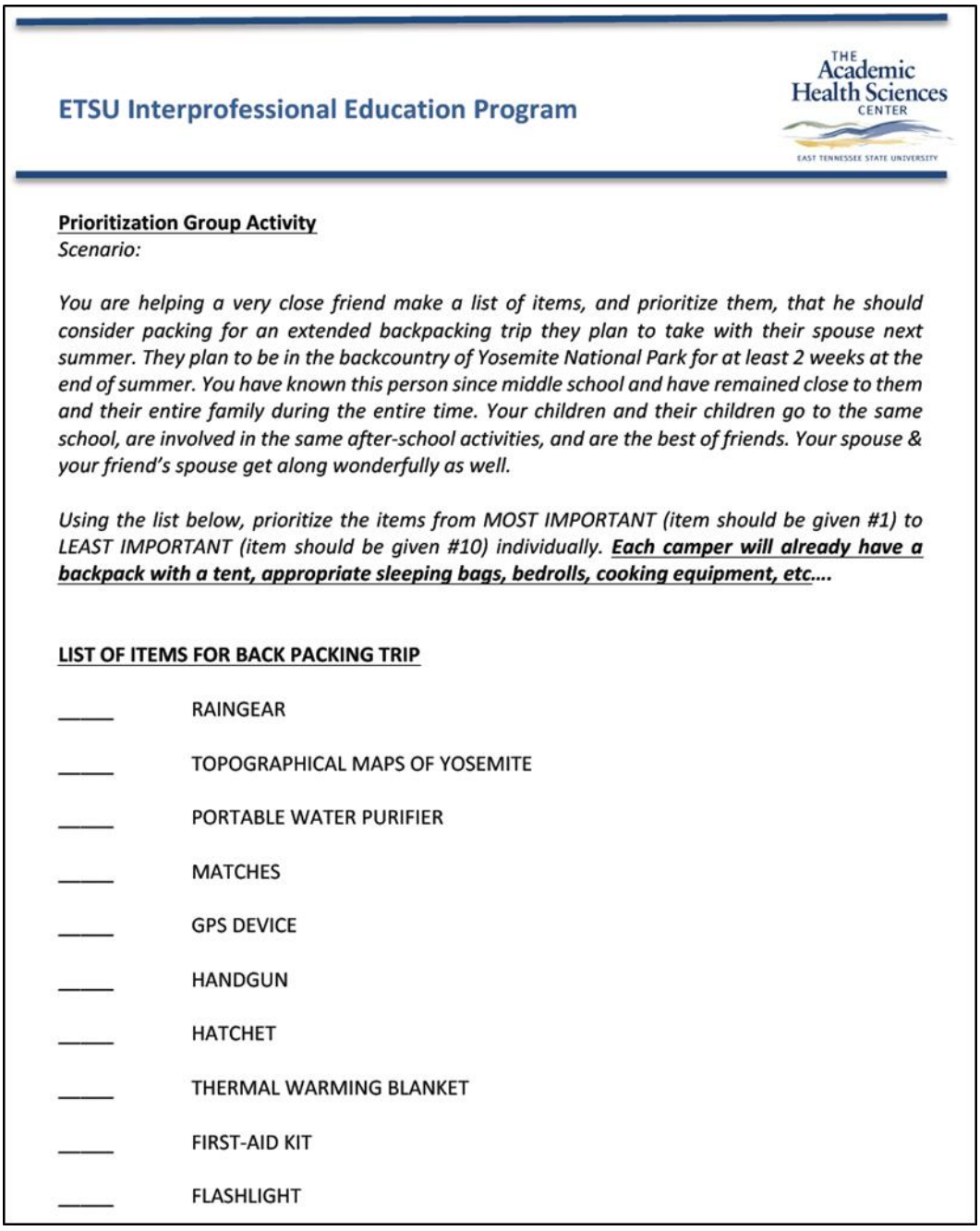
Prologue Schedule:

- Welcome & Overview
- Ice-breaker group activity
- Prioritization activity #1 & debrief
- Prioritization activity #2 & debrief
- Lunch and "Box of Stuff" time
- "Box of Stuff" group presentations
- Debrief of the day & next steps

Upon arrival to the event, all students were randomly assigned to learning groups that included 4-5 students from various colleges and departments within the AHSC at ETSU. The makeup of the groups was not the same from group to group, but all groups included 4-5 students from uniquely different professional programs at ETSU. Student groups were provided with a brief welcome and overview of IPEP at the beginning of prologue experience. A simple icebreaker activity followed to help the interprofessional learners begin to know each member of their assigned learning groups. This was followed by two "prioritization activities" to engage the learners at a deeper level and to begin to create debate within the groups to stimulate the need for the learning teams to work together toward a common goal. The prioritization activities can be seen in Figures 2 and 3. The first prioritization activity was not healthcare related and was simply used to create opportunities for the learning groups to come to common ground regarding and issue in which they had no vested interest – prioritizing importance of items to be included in a backpacking trip (see Figure

2). This exercise began to show the groups the importance of communication and respect when working toward a common goal – the prioritization list. This session ended with a debrief activity wherein the student groups discussed what techniques were used to help them accomplish their common goal as well as discussing opportunities to improve the process of working together as a team in the future. That led into the second prioritization activity in which student learning teams were asked to create a priority list of responsible parties for a patient's problem with pain management issues (see Figure 3). This second prioritization activity used the principles gained in the first activity, but maximized the potential for disagreement within the learning groups (by design) in order to further engage the interprofessional student learners in a topic that was more professionally relevant. As with the initial prioritization activity, students were asked to create an individual priority list first, then to create a team-based priority list second. It was in the creation of this second team-based priority list that the students were able to see how communication, conviction, passion, professional background, life experiences, and many other issues shaped how the team worked together (not always functionally) to resolve a commonly seen problem in the current healthcare system.

The morning session of the IPE Prologue experience ended with each interprofessional learning group being given a box with the contents of a children's 300-piece Erector™ set (including various metal parts, gears, and 2 tools), a roll of duct tape, and no directions. They were told to create a new device that could help to solve a problem within the current US health system during their 90-minute lunch break. Each learning group was required to provide a presentation to the entire collective of faculty and students gathered for the Prologue experience in the afternoon. All members of each group were required to participate in the presentation of their learning group. Learning groups were incentivized with gift cards to a local restaurant to be provided to the winning learning group. This activity was designed to further create interprofessional work within the groups (in some cases between groups) to reach a common goal with very little direction. Student groups were quite inventive in their creations, with one group using a smart phone to record a "commercial" for their product and then post to the internet prior to their formal presentation to the entire collective group. The day concluded with final debriefing presentations that attempted to tie the pre-prologue preparation work to the experiences of the day as well as further instructions for Phase 2 (Experiences) of IPEP.



ETSU Interprofessional Education Program

THE Academic Health Sciences CENTER
EAST TENNESSEE STATE UNIVERSITY

Prioritization Group Activity
Scenario:

You are helping a very close friend make a list of items, and prioritize them, that he should consider packing for an extended backpacking trip they plan to take with their spouse next summer. They plan to be in the backcountry of Yosemite National Park for at least 2 weeks at the end of summer. You have known this person since middle school and have remained close to them and their entire family during the entire time. Your children and their children go to the same school, are involved in the same after-school activities, and are the best of friends. Your spouse & your friend's spouse get along wonderfully as well.

Using the list below, prioritize the items from MOST IMPORTANT (item should be given #1) to LEAST IMPORTANT (item should be given #10) individually. ***Each camper will already have a backpack with a tent, appropriate sleeping bags, bedrolls, cooking equipment, etc****....*

LIST OF ITEMS FOR BACK PACKING TRIP

_____ RAINGEAR

_____ TOPOGRAPHICAL MAPS OF YOSEMITE

_____ PORTABLE WATER PURIFIER

_____ MATCHES

_____ GPS DEVICE

_____ HANDGUN

_____ HATCHET

_____ THERMAL WARMING BLANKET

_____ FIRST-AID KIT

_____ FLASHLIGHT

Figure 2. Prologue Prioritization Activity #1

ETSU Interprofessional Education Program

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Case Scenario Group Activity

BF is a 58-year-old male who used to work as an assembly line operator at Eastman Chemical Plant in Kingsport until 3 years ago. He left his job secondary to a disability 3 years ago after being involved in an accident at work that left him with chronic back pain and an inability to stand on his feet in one place (as was needed in his position at Eastman). BF has been on chronic narcotic medications to manage his pain for the last 2 years – taking 2 different medications (a long acting pain reliever once every day + a short acting pain reliever for break through pain up to 4 -6 times a day as needed).

BF gets his narcotic medication prescriptions through a Pain Clinic in Morristown, though he has received several prescriptions from his provider in the Primary Care Office to "tide him over" until he could get back to the Pain Clinic as he missed several appointments in the last year due to transportation issues & having to be in court to support his father & brother in a recent case. He gets all of his prescriptions (including his narcotic pain medications) filled at the same pharmacy. However, he started having his wife pick up his prescriptions through the drive-through about 9 months ago because he states, "I always felt like I was being looked down on by all the pharmacy staff – like I was an addict or something".

Recently, BF has been seeing behavioral medicine providers for worsening depression. He stated in the last visit that he feels worthless with the loss of his job and not being able to work and provide for his family. He states that he feels as though everyone judges him because of his being on disability & chronic pain medication. He admits that he has sometimes thought of suicide, but not with a clear plan. At the last visit, the psychologist suggested it might not be the best thing for him to have large quantities of pain medications as he currently does. The psychologist has left multiple messages with nurses at the Primary Care Office & Pain Clinic Office about her concern of BF's access to large amounts of pain medication, but has not had direct contact with any of the providers at those clinics.

At his last visit (2 weeks ago) to the Primary Care Clinic, his wife & BF left in a loud outburst that resulted in a uncomfortable scene with BF's wife yelling at the provider and nurse after the provider (not the usual provider & nurse team that BF sees at visits to the Primary Care Clinic) refused to refill either of BF's 2 narcotic pain medications. The wife said, "None of you understand what we are going through. You don't care about BF or our family, and what all this is doing to us. What are we supposed to do? What are we supposed to do?"

OTHER INFORMATION:

- *BF's father & brother were recently in the weekly Kingsport arrest report sold in convenience stores. They were arrested for possession & sale of narcotics.*
- *The electronic search of BF's refill records suggest that he gets all of his narcotic pain medications filled at the same pharmacy from 5 different prescribers (primary care provider, 2 pain clinic providers, & 2 ER providers) over the last 12 months.*
- *No phone calls between the pharmacy and the Primary Care Office / Pain Clinic Office concerning any perceived medication-related problems have occurred in the last 12 months.*

Figure 3. Prologue Prioritization Activity #2

Experiences (Phase 2)

Phase 2 (see Figure 1) of IPEP sought to expose students to each of the four core competencies for interprofessional collaborative practice by way of formative coursework and/or extracurricular activities across two academic years (a total of four semesters). Each college was

first tasked with identifying courses that met IPEP inclusion criteria (i.e., proposed courses had to include both faculty and student representation from at least two professions), and a sub-committee of IPEC then vetted those courses. Additionally, on a rotating basis, each college was assigned a core competency for which to seek extracurricular activity proposals from faculty each fall and spring semester. See Table 1 for the 2012 – 2014 semester activity assignments by college. Also note efforts made to accommodate distance learning students by assigning and offering asynchronous, online activities in each of the four core competency areas. Interested faculty completed an activity proposal form and submitted the proposal to the IPEC vetting sub-committee. Activities meeting the IPEP criteria (i.e., proposed activities had to include faculty representation from at least two professions and be applicable and made available to any student enrolled in IPEP irrespective of profession) were made available to students each semester through a catalog posted to the program's Desire 2 Learn (D2L) website. From the D2L link, students were asked to sign up for an activity based on interest, availability and need. After the completion of each course or extracurricular activity, faculty were responsible for reporting students' participation to IPEC in order to track IPEP completion.

Table 1. Semester Activities by College and Competency, 2012 – 2014

College	Fall 2012	Spring 2013	Fall 2013	Spring 2014
Clinical & Rehabilitative Health Sciences	Values/Ethics ***(asynchronous)***	Teams/Teamwork	Communications	Roles/ Responsibilities
Medicine	Teams/Teamwork	Communications	Roles/ Responsibilities ***(asynchronous)***	Values/Ethics
Nursing	Communications	Roles/ Responsibilities ***(asynchronous)***	Values/Ethics	Teams/Teamwork
Pharmacy	Roles/ Responsibilities	Values/Ethics	Teams/Teamwork	Communications ***(asynchronous)***
Public Health	Values/Ethics	Teams/Teamwork ***(asynchronous)***	Communications	Roles/ Responsibilities

Courses meeting IPEP inclusion criteria averaged 3.0 credit hours per semester and included courses like Health Care Informatics and Technology (Core Competency: Interprofessional Communications), End of Life Clinical Care (Core Competency: Roles & Responsibilities), Interdisciplinary Approaches to Bioethical Issues (Core Competency: Values & Ethics), and Rural Health Research & Practice (Core Competency: Teams & Teamwork). Many students enrolled in these courses as a part of their chosen profession's required or elective curriculum, with one course offering students the opportunity to study abroad. Activities meeting IPEP inclusion criteria included activities with titles such as, "LGBT Healthcare: Best Practices in the Healthcare Relationship" (Core Competency: Interprofessional Communications), "Contagion: Values and Ethics in a Public Health Emergency" (Core Competency: Values & Ethics), "NICU Follow-Up Clinic" (Core Competency: Roles & Responsibilities), and "Prescription Drug Abuse Prevention through an Interprofessional Team Approach" (Core Competency: Teams &

Teamwork). Most of the activities required students to complete a short reading assignment before the activity, participate in approximately 3 hours of face-to-face or online viewing work, and submit a final written reflection. More details on post-activity data collection and evaluation is provided in the 'Program Assessment and Evaluation' section below.

Capstone (Phase 3)

The IPEP Capstone event was designed to provide opportunities for education at the transformational level of learning. In keeping with the extra-curricular strategy of IPEP, this event was held late in the spring semester on a Saturday for 8 hours. The event was held at a remote, off-campus location to provide a more unique environment for the day-long experience. It was a simulated refugee camp experience, wherein the interprofessional learners were tasked with the preparation of an area of land for providing service/care to a group of refugees (students were told to prepare for approximately 100 people to be coming to the camp). The schedule for the Capstone experience can be seen at the right of this paragraph.

Capstone Schedule:

- Welcome & Overview
- Student group planning session
- Student group preparing area for refugees entering camp
- Student group addresses challenges created by refugees & workers
- Debrief of the day

The day began with a brief introduction of the scenario and what the learners' expectations were. Over breakfast, the students began to organize; first coming together as the entire group to create a list of priorities that would need to be accomplished in order to prepare the area of land to welcome 100 projected refugees. Several students from different colleges within the AHSC quickly stepped to the front of the group and began to facilitate the discussion to help create the priority list. This priority list with individual items became separate working groups that were each tasked with creating various parts of the refugee camp. Supplies were provided to the students near the land area designated to be the refugee camp site. Students were responsible for matching needed supplies with the previously created priority list as not all supplies provided were necessarily needed for the creation of the refugee camp. The working groups created various stations that the entire student group had prioritized earlier in the morning. These stations included such subjects as sanitation, housing, meal preparation, security/intake/tracking of refugees, and medical/health-related issues.

The interprofessional learners began creating the aforementioned stations on the land area designated for the refugee camp. They were told to expect refugees to begin arriving around lunch time, as that would give them time to create the camp with the organized stations as described above. However, approximately 2 hours prior to the expected arrival of the simulated refugees simulated problems (both medical & psychosocial) began happening that caused the student teams to reprioritize the work of the smaller working groups. Multiple simulated medical psychosocial problems were presented to the group such as a simulated femur fracture from a worker within the camp due to a tree falling on him, a pregnant woman giving birth, a mother trying to confiscate antibiotics for a child in a nearby village, local tribal leaders presenting to the camp explaining that the refugee camp could not be located where the students had planned, multiple patients with gastroenteritis, and a child separated from her mother, among others. Faculty members were stationed throughout the simulated refugee camp and texted photographs

of examples of interprofessional issues to a common phone number that were all used during the debriefing session at the end of the day. The simulated problems were designed to challenge the students' abilities to engage the four core competencies of interprofessional education. At the end of the day all students were gathered in a common area for a debriefing session to discuss important interprofessional accomplishments as well as areas for improvement for the experience.

Program Evaluation and Assessment

The IPEP program included an experimental component. As is recommended for evaluation of the initial stages of IPE programs, we started with self-assessment of learners' reactions to the learning experience, their attitudes toward interprofessional education and practices, and acquisition of knowledge and skills (Freeth et al., 2005; Reeves, 2010). The questions of the experimental arm of IPEP focused on whether the students' attitudes, knowledge and skills changed as a result of participating in the program as a whole and the activities more specifically.

Experimental Method

Participants. All students from the two IPEP cohorts were asked if they were interested in volunteering to participate in the experimental arm of the program. Students who indicated interest reviewed an informed consent approved by ETSU's Institutional Review Board, and those who consented were included in the program. At the beginning of the program, 103 students completed a demographic questionnaire. There were 71 females, 31 males (1 no response); 65% were 20-25 years, 21.4% were 26-30 years, 5.8% were 31-40 years; 3.9% were 41-50 years, and 1% was 51-55 years (3 no response). Of the 99% of participants who reported race and ethnicity, 87.4% were White, 4.9% were Asian, 2.9% were Black, 2.9% identified as other, and 1% was Hispanic. Of the 97.1% of students who responded to a question about their socio-economic background, 48.5% indicated upper middle class, 32% lower middle class, 14.6% working class and 1.9% poor. Of the 99% who reported on residency, 50.5% were urban, 35.9% were from a small town, and 12.6% were rural. In reporting college affiliation, 29.1% were from the College of Pharmacy; 26.2% were from the College of Clinical and Rehabilitative Sciences, representing audiology, speech-language pathology, nutrition and physical therapy; 18.4% were from the College of Medicine; 10.7% were from the College of Nursing, 8.7% were from the Department of Psychology, and 6.8% were from the College of Public Health. Of the 88.3% of students who reported their year of study, 40.8% were in first year, 47.6% were in second year, and 1% was in third year.

Procedures. To study attitudes toward interprofessional education and practice, students completed three surveys. Selection of these standardized surveys was based on a review of the literature, which indicated the popularity of use, experts' recommendations for IPE program evaluation, and well-documented strong reliability and validity during test construction and subsequent use across multiple programs (Reeves, 2010). Pre- and post-program surveys were completed at the prologue and Capstone events. Using the first cohort, a factor analysis was conducted to determine whether the proposed constructs for each attitude survey held true with our students. While the broad constructs were confirmed, there were a number of questions from

the original survey that did not associate. The responses for these questions were excluded from the analyses. A brief description of each survey follows.

1. Attitudes Toward Health Care Teams Scale (ATHCTS; Heinemann, Schmitt, Farrell & Brallier, 1999; Hyer, Fairchild, Abraham, Mezey, & Fulmer, 2000). We included 21 questions that contributed to the constructs of Team Value/Quality of Care, Team Efficiency/Costs of Team Care, and Shared Leadership/Physician Centrality. Participants rated statements on a 5-point scale from strongly disagree to strongly agree.

2. Interdisciplinary Education Perception Scale (IEPS; McFadyen, Maclaren & Webster, 2007; Luecht, Madsen, Taugher, & Petterson, 1990). We included 18 questions that contributed to the constructs of Competency and Autonomy, Perceived Need for Cooperation, and Perception of Actual Cooperation. Students rated statements on a 6-point scale from strongly disagree to strongly agree.

3. Readiness for Interprofessional Learning Scale (RILS; Parsell & Bligh, 1999; McFayden, Webster, Strachan, Figgins, Brown, & McKechnie, 2005). We included 19 questions that contributed to the constructs of Team-work and Collaboration, Professional Identity: Positive and Negative, and Roles and Responsibilities. Students rated statements on a 5-point scale, from strongly disagree to strongly agree.

In addition, to study acquisition of knowledge and skills from the students' perspective based on their activity experiences, a Core Competency and Proficiency Survey (CCPS) was developed. It was based on the framework of Hanley (1994) and included each of the specific competency components within the four core competencies identified by IPEC (2011). This yielded nine specific competency questions for Roles and Responsibilities, 10 for Values & Ethics, 8 for Interprofessional Communication and 11 for Teams and Teamwork. Each of the specific competencies was made into a statement prefaced with *I know...,* to measure knowledge, *I practice...* to measure skills, and *I value...* to measure attitude at the activity level. Students rated each of the resultant 114 statements on a 5-point scale from *"I have no or little idea"* to *"I can teach this to someone else"*.

There was attrition in the voluntary completion of post-program surveys. Not all of the students who completed a pre-program survey attended the Capstone experience, which is when the post-program surveys were completed. Attempts to solicit completion of the surveys of those who did not attend met with moderate success.

Students received the pre- and post-activity surveys online, through SurveyMonkey® during the final three semesters of IPEP. The surveys were sent within the week before and the week after the scheduled event. The response rate was poor with only 43 students completing both the pre- and post-surveys for a total of 61 activity evaluations. While all available participant data were used within a time analysis, only the data of those who completed both pre-and post-program or activity surveys were included in pre- to post-comparisons. The numbers of participants who completed each assessment component pre- and post-program is represented in Table 2.

Table 2. Number of Participants Who Completed Study Instruments Before and After Participation in the IPEP Program or an Activity

Instrument	Pre IPEP or Activity	Post IPEP or Activity
ATHCTS	103	73
IEPS	102	70
RILS	102	71
Roles & Responsibilities	34	21
Values & Ethics	40	23
Communication	18	14
Teams & Teamwork	26	20

Design and Analyses. Mean ratings on each survey comprised the dependent variables for comparison. Analysis of these ratings was conducted using a t-test for repeated measures. The study was designed to answer four key questions. The questions and data related to attitudes will be presented first, followed by the questions and data related to knowledge and skills.

Attitudes. When examining students' attitudes, the first question was: Do the students' ratings of the constructs within each survey differ? To answer this question we compared ratings of the constructs within each survey pre-program and then again post-program. The second question was: Do the students' ratings of the constructs within each survey change pre- to post-program? To answer this question, we compared pre- to post-program ratings of the constructs within each survey (i.e., ATHCTS, IEPS, RILS). As well, we compared pre- to post-activity ratings of the value questions on the CCPS.

On the ATHCTS, students rated Quality of Care highest, then Costs of Team Care, with Physician Centrality the lowest, with significant differences in ratings between each construct at both pre- and post-program (see Table 3). The ratings for all constructs improved at statistically reliable levels pre- to post-program (see Figure 4).

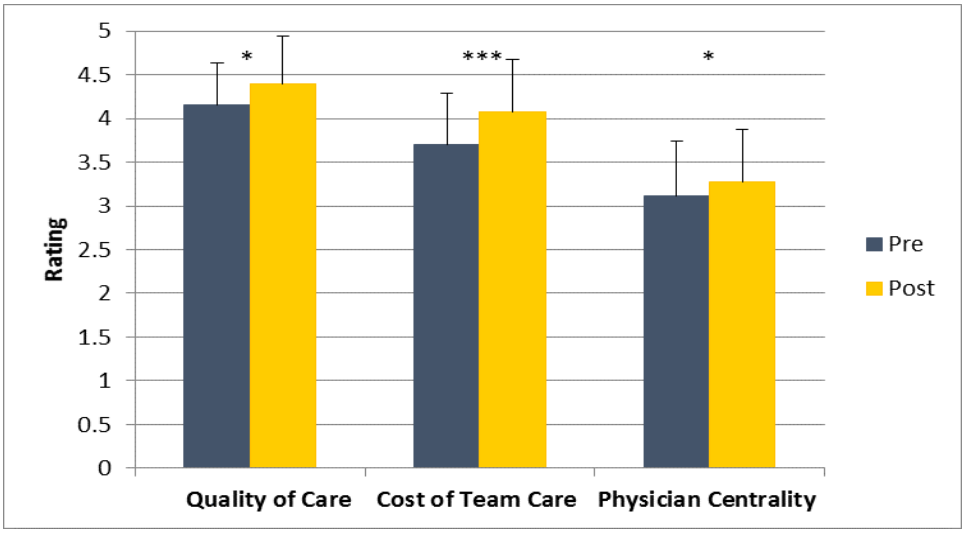

Figure 4. Comparison of Student's Ratings of Constructs on the ATHCTS

Table 3. Comparison of Differences in Students' Ratings for Survey Constructs

Surveys & Constructs	Pre-program *t*			Post-program *t*		
ATHCTS	2.	3.		2.	3.	
1. Quality of Care	7.87	12.94		4.47	10.95	
2. Cost of Team Care		7.41			8.22	
3. Physician Centrality						
IEPS	5.	6.		5.	6.	
4. Need for Cooperation	1.96	4.73		0.40	0.07	
5. Competency& Autonomy		4.52			0.59	
6. Actual Cooperation						
RILS	8.	9.	10.	8.	9.	10.
7. Teamwork & Collaboration	4.49	11.94	20.73	3.59	10.26	13.69
8. Pos. Professional Identity		8.83	13.86		8.91	11.62
9. Roles & Responsibilities			0.68			0.83
10. Neg. Professional Identity						

p<.001; All comparisons that were significantly different were at this level.

On the IEPS, students rated Perceived Actual Cooperation significantly lower than Perceived Need for Cooperation and Perceived Competency and Autonomy before IPEP. Following their participation in the program, there were no significant differences between construct ratings (see Table 3). This is a reflection of the statistically reliable increase in ratings in Perception of Actual Cooperation from pre-to post-program, while the ratings for the other constructs did not significantly change (see Figure 5).

On the RILS, both pre- and post-program, students rated Teamwork and Collaboration significantly higher than all other constructs Positive Professional Identity was next and also reliably higher than the remaining constructs. Negative Professional Identity and Roles and Responsibilities ratings followed and did not differ from one another. None of the students' ratings changed significantly from pre- to post-program (see Figure 6).

On the CCPS, students' mean ratings for valuing core components were significantly higher following their participation in activities (see Figure 8).

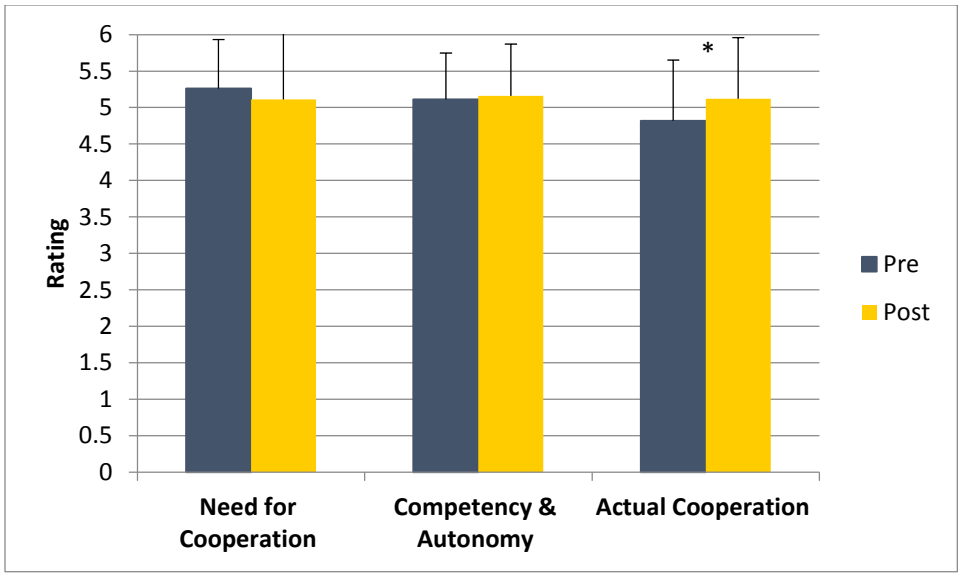

Figure 5. Comparison of student's ratings of constructs on the IEPS

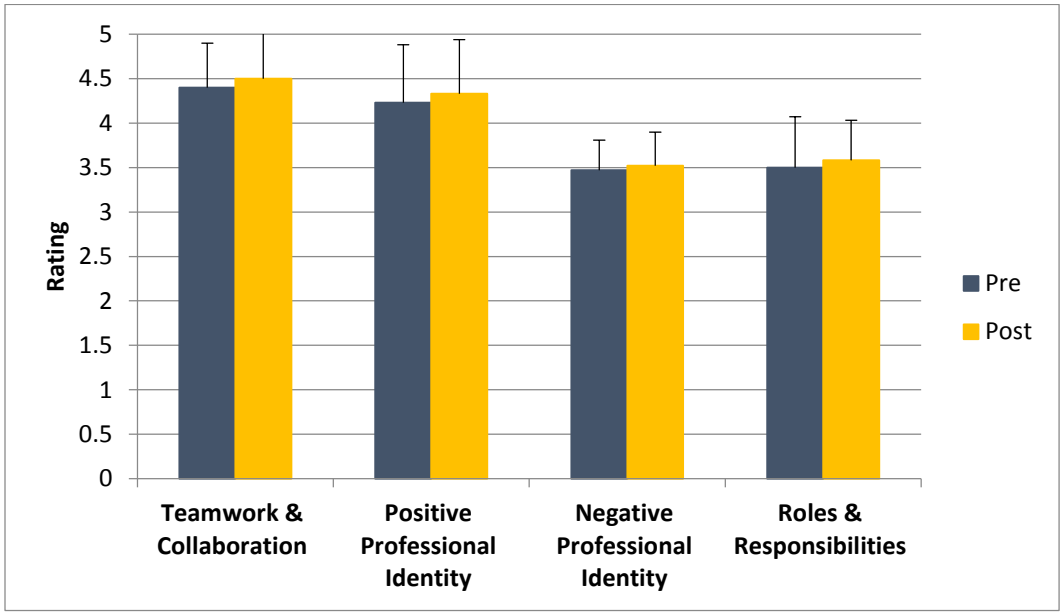

Figure 6. Comparison of student's ratings of constructs on the RILS

Knowledge and Skills. In examining students' acquisition of knowledge and skills using the CCPS, the third study question was: Do the students' ratings of their knowledge, skills and values of the four core competencies change pre- to post-activity? To answer this question, a composite of the specific competencies within each core competency ratings, including knowledge, skills, and values ratings for were compared pre- to post-activity. The students

significantly increased their ratings for all four core competencies following participation in targeted activities (see Figure 7).

The final study question was: Do the students' ratings of knowledge and skills change pre- to post-activity? To answer this question, we compared pre- to post-activity composite proficiency ratings for knowledge and for skills each proficiency. The students significantly increased their ratings for both knowledge and skills following participation in targeted activities (see Figure 8).

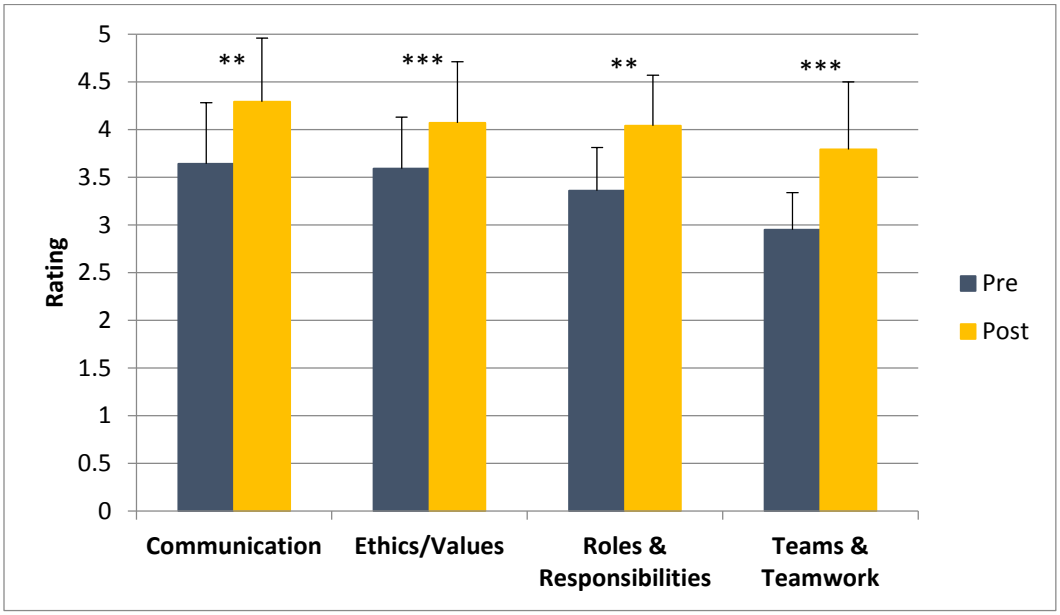

Figure 7. Comparison of Students' Pre- to Post-Activity Ratings for Core Competencies

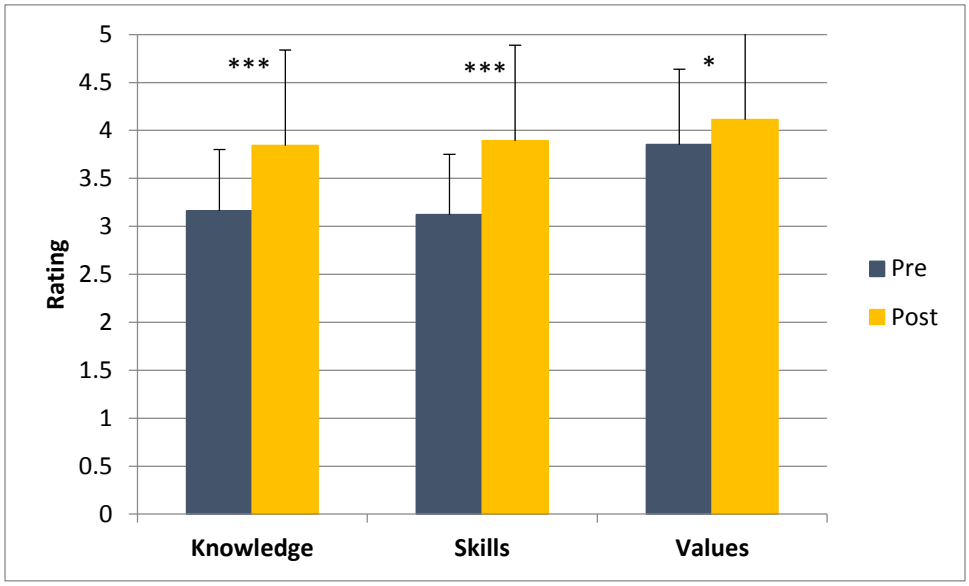

Figure 8. Comparisons of Students' Pre-to Post-Activity Ratings for Proficiencies

Discussion

Overall, students entered IPEP with positive attitudes about interprofessional practice and education. On average, they "agreed" to "strongly agreed" with positive statements. Following participation in the program there was a numerical increase in ratings on 9 out of 10 constructs, with 4 being statistically reliable. While it may be that the lack of statistically significant change was due to compressed room for growth, there were indications that this is not entirely the case.

On the ATHCTS, the construct of Physician Centrality, which measures team members' attitudes toward physicians' authority in teams and their control over information about patients, the students averaged a "neutral" rating and though it changed significantly, it remained "neutral". On the RILS, students' ratings of Negative Professional Identity, which measures the value of learning with students from other professions, and Roles and Responsibilities, which examines supportive attitudes about roles in professional practice and academic training, were in the "neutral" to "agree" range and did not change as a result of participation in IPEP. Finally, on an individual basis, at both pre- and post-test there were students who averaged "strongly disagreed" to "disagreed" on particular constructs.

At the activity level, the outcomes were more encouraging. On average, students made significant gains in their own estimation from "neutral" to "agreed" of their knowledge, skills, and values, on all of the core competencies. When students engaged together in competency-focused activities in smaller groups, greater improvement was seen.

New Measurements. The measures used in IPEP, thus far involve the evaluation of learners' reactions to IPEP, and self-assessment of their attitudes, knowledge and skills. These will continue to be examined as part of the next iteration of the program as they revealed important

insights, including areas of need. As well, repetition of these measures will provide an opportunity for comparison. The next step in a progressive path toward measurement of outcomes in IPE includes objective measures of acquisition of knowledge and skills (Freeth et al., 2002; Reeves, 2010). ETSU-IPEC is currently adding these to its experimental arm of the program.

Lessons Learned From First ETSU IPE Pilot Program (IPEP)

1. Purposefully assign students to interprofessional teams with which to move through the program, as opposed to individual, autonomous tracks;
2. Host one IPE Day per semester, as opposed to offering the prologue and Capstone events on Saturdays and offering extra-curricular activities in the evening;
3. An IPE program at a diverse AHSC must meet the needs of multiple kinds of students (on-ground, on-line, blended);
4. Structured schedules across all colleges within the AHSC are imperative for a successful IPE program;
5. Purposeful and continuous faculty development is essential for a successful IPE program;
6. All phases of an effective IPE program must have clear relationships with one another that build one upon another; and
7. Participation by faculty within a growing IPE program must be valued by administration of colleges within the AHSC in the form of promotion and tenure.

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