



## **Customized Lab Kits in Practical Nursing Education**

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### **Abstract**

Active learning strategies used in a medical environment have been shown to engage students and enhance their learning of demonstrated techniques (Graffam, 2007). Research has indicated that nursing students often feel unprepared to use nursing skills in clinical placement and that continued practice of such skills through active learning might increase students' confidence in performing them (Strand, Naden, & Slettebo, 2009; Smith, 1992). It was hypothesized that (1) students learning nursing skills with access customized lab kits would perceive greater confidence in those skills in comparison to when skills were learned without access to the customized lab kits and (2) instructors who teach practical nursing skills when their students have access to the customized lab kits would perceive greater rates of confidence in their students while using the learned skills. First and second year practical nursing students were provided with customized lab kits for practice during their advanced nursing skills lab in the second semester. After completion of their second semester, students completed an online survey that assessed the students' perception of skills acquired in the course, the value they placed on having the kits during the skills laboratory, and the confidence they had in performing nursing skills prior to and after practice with the customized lab kits. Instructors used the customized lab kits to demonstrate skills during the skills laboratory. As such, instructors completed an online survey that assessed the value they placed on the kits, and their students perceived confidence levels in performing skills after practice with the kits. Results demonstrate that both students and instructors had favourable experiences in using the customized lab kits to teach and practice nursing skills. Both students and instructors placed very high value on having access to the customized lab kits during the nursing skills laboratory and would highly recommend use of the kits in the future.

## Introduction

It is known that active learning, in comparison to passive learning, is beneficial to students' learning processes (Bronwell & Edison, 1991). More specifically, active learning strategies used in a medical environment have been shown to engage students and enhance their learning of demonstrated techniques (Graffam, 2007). As such, Bronwell and Edison (1991) suggested that active learning strategies are useful because (1) students tend to be more involved with active learning in comparison to passive learning, (2) students are engaged in activities related to theory being taught, (3) there is a great emphasis on developing student skills, (4) there is a great emphasis on exploration of attitudes and values, (5) students experience increased motivation in learning, (6) students receive immediate feedback, (7) and it encourages higher order thinking. Overall, Bronwell and Edison (1991) suggests that "active learning involves students in doing things and thinking about the things they are doing." Such aspects of active learning become particularly important when considering the role and responsibilities of a practical nursing in the medical setting. Given this information, it seems that active learning strategies used in the teaching and learning environment are crucial in mastering practical nursing skills and having confidence in carrying out the procedure on patients.

Research has indicated that nursing students often feel unprepared to use nursing skills in clinical placement and that continued practice of such skills might increase students' confidence in performing them (Strand, Naden, & Slettebo, 2009; Smith, 1992). It has been suggested by Morgan (2004) that students can benefit from a theory-practice integration method to teaching nursing skills in that skills learned during their first practice placement can help students relate theory to practice when using the skills.

In addition, Maginnis and Croxon (2010) suggested that there should be parity between what is taught to students and what is experienced by students. They underscore the lack of research on the

effectiveness of clinical laboratory sessions for practical nursing students and whether skills practice in the lab serve as an aide for the students' understanding of the theory related to said skill. The results demonstrated by Maginnis and Croxon (2010) demonstrate clinical laboratory sessions prepared students to use most skills (i.e. moving patients, oxygen saturations, post-operative observations, etc...) during clinical practice in clinical laboratory sessions. However, students felt unprepared to use skills that were not practiced often (i.e. neurovascular assessment and other assessment tools) during the clinical laboratory. Their research emphasizes the importance of practicing skills in clinical laboratories to adequately prepare practical nursing students for successful use of learned skills on patients.

Given this information, it may be extrapolated that practical nursing students who have an opportunity for ample practice using materials similar to those used in the clinical setting will be more prepared to properly use learned nursing skills upon entry into clinical placement. As such, the current study investigates whether customized lab kits enhance the learning of practical nursing skills and whether said kits facilitate teaching in the clinical laboratory setting. It is hypothesized that (1) students learning nursing skills with access customized lab kits will have greater confidence in those skills in comparison to when skills were learned without access to the customized lab kits and (2) instructors who teach practical nursing skills when their students have access to the customized lab kits will perceive greater rates of confidence in their students while using the learned skills.

### **Method**

A brief information session concerning the research study was provided by the study investigators to all first and second year students entering their second semester of the practical nursing program. A sample of 71 nursing students volunteered to participate in the study. Similarly, faculty members responsible for instructing the nursing skills lab were given a brief information session concerning the study and a sample of 5 faculty members volunteered to participate in the study.

Incentives were offered to neither students nor faculty for their participation in the study. Research ethics approval was granted by the NBCC (New Brunswick Community College) Research Ethics Review Committee.

Students were provided with customized lab kits for their advanced nursing skills lab in the second semester. The first year practical nursing students received four customized lab kits. These kits included (1) foley catheterization supplies, (2) blood administration supplies, (3) intravenous therapy supplies, and (4) sterile dressing trays and supplies. The second year practical nursing students received one customized lab kit that included adult physical assessment materials. Students took ownership of the kits and were able to practice learned skills during and after their nursing skills lab.

Lab instructors were also provided with the customized lab kits and used them during lab procedures to demonstrate specific nursing skills to the students. It should be noted that, occasionally, instructors used other materials in addition to materials provided in the customized lab kits to demonstrate nursing skills.

After completion of their second semester, students completed an online survey using Fluid Surveys software. The survey consisted of a 23 item questionnaire concerning relation to success in a skills course resulting from the use of customized lab kits constructed by the study investigators. The questionnaire included items related to skills acquired in during previous skills courses and during current skills courses, perceived value of having customized lab kits, and confidence in performing new skills in relation to the use of customized lab kits. Items were based on an ordinal scale whereby students responded using a series of Likert scales ranging from 1 (poor) to 5 (excellent), 0 (never) to 4 (four or more), 0 (strongly disagree) to 4 (strongly agree), 1 (not at all confident) to 10 (very confident), and 0 (extremely dissatisfied) to 6 (extremely satisfied).

Similarly, instructors completed an online survey using Fluid Surveys software. The survey consisted of a 19 item questionnaire concerning their students' success in a skills course resulting from the use of customized lab kits. The questionnaire was constructed by the investigators of the study and included items related to the instructors' perception of how customized lab kits facilitated learning in their students, their students' skills acquired in nursing skills courses, perceived value of having customized lab kits, and confidence in performing new skills in relation to the use of customized lab kits. The same series of Likert scales that was used by students was used by instructors.

## **Results**

### **Instructor Survey Questionnaire Results**

A sample of 71 first (N = 49) and second (N = 22) year nursing education students (69 female and 2 male) completed a 23 item questionnaire in relation to success in a skills course resulting from the use of customized lab kits. The mean age of participants was 24.41 (SD = 5.85). The questionnaire included items related to skills acquired in during previous skills courses and during current skills courses, perceived value of having customized lab kits, and confidence in performing new skills in relation to the use of customized lab kits.

Students were asked to rate their grades in previous and current skills courses via a self-report scale ranging from 1 (Excellent) to 5 (Poor). The majority of students rated their grades from a previous skills course to be either good (31%) or very good (1.4%). A small percentage of students rated their grades as poor (14.1%). Likewise, the majority of students rated their grades from the current skills course to be either good (29.6%) or very good (4.2%). A smaller percentage of students rated their grades in the current skills course to be poor (12.7%).

Students were asked to indicate the number of times during previous and current skills courses when they felt frustrated while learning a new skill, fearful that they would not be able to learn the skill, or unsuccessful in learning a nursing skill. The results are summarized in Table 1.

A large majority of the students either agreed (46.5%) or strongly agreed (39.4%) that having customized lab kits facilitated their learning of nursing skills in the lab. A small percentage strongly disagreed (5.6%), disagreed (4.2%), or neither agreed nor disagreed (2.8%) that having customized lab kits facilitated their learning of nursing skills in the lab.

Subsequently, students were asked how much value they placed on customized lab kits in learning new skills. A large majority of the students indicated that they would place good (35.2%) or excellent (46.5%) value on customized lab kits in learning new skills. A small percentage indicated that they would place no value (5.6%) or average value (11.3%) on customized lab kits in learning new skills.

Students were asked to indicate how many times, during the past four months, they practiced skills using customized lab kits before lab testing. The majority of students (52.1%) indicated they practiced skills 4 or more times and 25.4% indicated that they had practiced skills three times before lab testing. In total, 77.5% of students reported that they had practiced skills 3 or more times prior to lab testing during the past four months. A smaller percentage (16.9%) of students reported that they practiced the skills once or twice and 5.6% reported that they never practiced the skills prior to testing. Similarly, students were asked to indicate how many times, during the past four months, they practiced skills using the customized lab kits before clinical. The majority of student responses indicated that they never (29.6%) practiced skills prior to clinical or practiced them only once (16.9%). Conversely, many students reported that they had practiced skills two (9.9%), three (21.1%), or four or more (22.5%) times prior to clinical.

Table 1

*Skills acquisition statistics (%) for previous and current skills courses.*

	<u>Never</u>	<u>Once</u>	<u>Twice</u>	<u>Three times</u>	<u>Four or more</u>
<b>How many times during a previous skills course were you:</b>					
Frustrated while learning a nursing skill?	16.9	25.4	21.1	21.1	15.5
Fearful you would not be able to learn a new nursing skill?	31.0	23.9	18.3	9.9	16.9
Unsuccessful in learning a new nursing skill?	85.9	9.9	1.4	1.4	-
<b>How many times during you current skills course were you:</b>					
Frustrated while learning a nursing skill?	15.5	26.8	21.1	19.7	16.9
Fearful you would not be able to learn a new nursing skill?	31.0	19.7	19.7	14.1	14.1
Unsuccessful in learning a new nursing skill?	83.1	12.7	2.8	-	1.4

*Note: N = 71*



Overall, students were either quite satisfied (39.4%) or extremely satisfied (42.3%) with their experience learning nursing skills with customized lab kits. Fewer students were quite dissatisfied (1.4%), somewhat dissatisfied (2.8%), neither satisfied (7.0%), or somewhat satisfied (7.0%). None of the students were extremely dissatisfied with their experience learning nursing skills with customized lab kits. If made available, most students were either very likely (32.4%) or extremely likely (43.7%) to support the recommendation of purchasing customized lab kits in the future. Fewer students were not at all likely (1.4%), slightly likely (4.2%), or moderately likely (18.3%) to make that recommendation.

With regard to students' confidence in learned skills with or without customized lab kits, chi-square analyses were conducted. There was a significant difference in students' reported confidence in performing nursing skills learned with the customized lab kit in comparison to learning without the kit;  $\chi^2_{(54)} = 82.23, p < .01$ . Similarly, there was a significant difference in students' confidence in teaching a nursing skill learned with the customized lab kit in comparison to without the kit;  $\chi^2_{(72)} = 110.90, p < .01$ . Furthermore, there was a significant difference in students' confidence in manipulating or handling the equipment in performing a nursing skill with the customized lab kit in comparison to without the kit;  $\chi^2_{(54)} = 83.56, p < .01$ . In all previously mentioned cases, students were more confident in learning with the customized kit rather than without it (see Table 2). In contrast, a significant difference was not observed between students' confidence in collecting necessary supplies needed to perform a nursing skill with the kit in comparison to without it;  $\chi^2_{(63)} = 77.02, n.s.$  See Table 2 for descriptive statistics for students' confidence in performing new skills.

Students were asked an open-ended question with regard to what they liked most about the customized lab kits. Most of the students (55%) liked that they were able to take the kit home with them to practice skills outside of the lab setting. Students also liked the realistic/hand-on experience provided by the kits (10%), the ability to follow along with a video while practicing a skill (8%),

everything was available to them and they did not have to wait for a tool in the laboratory setting to practice the skill (10%), and that they were supplied free or charge and convenient (7%).

When asked an open-ended question with regard to what they liked least about the customized lab kits 25% indicated that they did not like that the kits were not exactly like those provided during testing / clinical situations. In addition, 17% of students indicated that there were not enough supplies in the kits to practice some skills more than once or twice. Fewer students indicated that the kits were a hassle to transport between home and lab (7%) or that there were broken or defective supplies in their kits (7%). In contrast, 24% of students indicated that they could not identify anything that they did not like about the kits. Furthermore, an additional 15% of students did not respond to the question implying that they did not identify anything they did not like about the kits.

Table 2

*Descriptive statistics for students' confidence in performing new skills with and without customized lab kits.*

	With customized lab kits		Without customized lab kits		$\chi^2$
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	
How confident are you in performing nursing skills learned with/without customized labs in the clinical setting?	7.60	1.63	6.20	1.98	82.23*
How confident are you in teaching a nursing skill learned with/without the customized lab kit?	7.12	1.79	5.64	2.17	110.90*
How confident are you in collecting all necessary supplies needed to perform a nursing skill learned with/without the customized lab kits?	7.74	1.73	6.43	1.89	77.02
How confident are you in manipulating or handling the equipment in performing a nursing skill learned with/without the customized lab kits?	8.01	1.58	6.04	2.21	83.56*

*Note:* N = 71

\* indicates significance at  $p < .01$ .

### Instructor Survey Questionnaire Results

A sample of 5 first and second year nursing instructors completed a 19 item questionnaire in relation to their students' success in a skills course resulting from the use of customized lab kits. The mean age of participants was 48.80 (SD = 10.33) and they spent an average of 14.20 (SD = 8.17) years teaching. All participants were female. The questionnaire included items related to the instructors' perception of how customized lab kits facilitated learning in their students, their students' skills acquired in nursing skills courses, perceived value of having customized lab kits, and confidence in performing new skills in relation to the use of customized lab kits.

Instructors were asked to rate, overall, the customized lab kits. Of the 5 instructors, they all rated the customized lab kits as either very good (N = 2) or excellent (N = 3). In addition, results from a series of questions related to the customized lab kits suggest that instructors agree that the kits facilitate learning of nursing skills (see Table 3). Subsequently, instructors were asked to indicate how much value they placed on the customized lab kits in relation to teaching nursing skills on a scale ranging from 1 (no value) to 5 (excellent value). All of the instructors indicated that they placed excellent value on the customized lab kits.

Furthermore, instructors were asked to observe whether students were more likely to acquire and practice skills if they were taught using customized lab kits. With regard to acquiring skills when taught using a customized lab kit, 20% (N = 1) of instructors indicated that they neither agreed nor disagreed whereas 80% either agreed (N = 3) or strongly agreed (N = 1) that the kits facilitated acquisition of new skills. With regard to practicing new skills, 20% (N = 1) of instructors agreed and 80% (N = 4) strongly agreed that students were more likely to practice a skill when taught using a customized lab kit.

Table 3

*Instructors' opinions (%) on customized lab kits in relation to facilitation of learning nursing skills.*

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Did the customized lab kits decrease your preparation time in setting up for nursing skills lab?	-	-	-	20.00	80.00
Did you find it easier to engage the students in learning nursing skills with the customized lab kits?	-	-	-	-	100.00
Did you find it easy to integrate the customized lab kits into your teaching practices in the skills lab?	-	-	-	-	100.00
Did the customized lab kits facilitate your teaching of nursing skills?	-	-	-	20.00	80.00
Did you observe students acquired higher grades in skills testing if skills were taught with the customized lab kit?	-	-	40.00	40.00	20.00
Did you observe the students were more prepared to perform a nursing skill in the clinical setting if the skill was taught with a customized lab kit?	-	-	20.00	60.00	20.00

*Note:* N = 5

Instructors rated their students' confidence in performing new skills when taught with and without the customized lab kits. On a scale from 1 (not at all confident) to 10 (very confident), instructors rated their students to have an average confidence level of 8.6 (SD = 0.55) in performing skills when taught with the customized lab kit. In contrast, instructors rated their students to have an average confidence level of 7.2 (SD = 0.84) in performing skills when taught without the customized lab kits.

When asked to rate their satisfaction with their experiences teaching nursing skills with the customized lab kits, all of the instructors indicated that they were either quite satisfied (20%) or extremely satisfied (80%). Subsequently, instructors were asked to indicate on a scale from 1 (not at all likely) to 5 (extremely likely) how likely they would be to recommend purchase the kits, if made available, for future nursing skills labs. All of the instructors (N = 5) indicated that they would be extremely likely to recommend purchase of customized lab kits in the future if they were available.

Instructors were asked an open-ended question in relation to what they liked most about the customized lab kits. Instructors indicated that they liked the ability of the students to take the kits home with them to practice skills (100%), that the kits decreased lab preparation time (40%), that the instructor had the same kit available to them in class to demonstrate skills with (20%), they were convenient and contained everything the student needed to practice skills (20%), and that the supplies in the kits were either similar or the same as the supplies in the clinical setting (20%). In contrast, when asked an open-ended question related to what they liked least about the customized lab kit, 80% (N = 4) of the instructors indicated that they would prefer if the supplies were the same as they were in the clinical setting (i.e., size of the sterile dressing tray was too small). The remaining 20% (N = 1) did not identify anything they did not like about the customized lab kit.

## Discussion

The current study was conducted with two purposes (1) to assess students' perceptions and confidence in their nursing skills with and without access to customized lab kits during clinical skills laboratory sessions and (2) to assess instructors' perceptions and confidence in their students nursing skills with and without use of customized lab kits.

### **Student Perceptions In Relation To Learned Nursing Skills Using Customized Lab Kits**

When asked to rate their current grades, a higher percentage of students rated their grades in current skills courses when customized lab kits were used to be "very good" in comparison to previous skills courses where the kits were not used. In addition, few students in the current skills course rated their current grades to be "poor" in comparison to previous skills courses where the kits were not used. This indicates that the students rated their grades to be higher when they had access to and practiced nursing skills with the customized lab kits during the clinical laboratory. This suggests that nursing skills students benefit from incorporation of the use of customized lab kits in the clinical laboratory setting.

Results of the current study suggest that there was no overall difference in students' level of frustration, fear, or their perception of whether they were successful at learning a new nursing skill when using customized lab kits in the clinical laboratory setting; however, most students either agreed or strongly agreed that having the kits facilitated their learning of a new nursing skill. As such, most students indicated that placed very high or excellent value on the kits in learning a new nursing skill. Furthermore, most of the students indicated that they were quite satisfied or extremely satisfied with their experience of learning new nursing skills with use of the customized lab kits. From this information, it may be extrapolated that although, at times, students were frustrated with the use of the customized lab kits, they still placed high value in learning new skills with the kits. This may indicate a general frustration while learning something new or that the students were frustrated with an aspect of

the kit that was not relevant to their learning of a new skill. For example, some of the students indicated, via an open-ended question regarding what they liked least about the kits, that some materials in the kits broke after use or that they were not exactly the same as the materials used in clinical practice. Thus, students' frustration may have arisen for the aforementioned reasons while, overall, they were still very satisfied in learning with the use of the kits.

With regard to what students liked most about the customized lab kits, students indicated that they liked the ability to take the kits home with them for further practice of the learned skills. In addition, students appreciated that they did not have to wait for materials while in the clinical laboratory to practice their skills as they had access to all materials within their own personal kit. Other students enjoyed the increased hands-on experience and convenience provided with use of the kits. In contrast, some students indicated that they did not have enough supplies to adequately practice some nursing skills, that the kits were a hassle to carry around, or that some of the kits had defective or broken supplies; however, most of the students did not have anything negative to say regarding the kits.

Overall, students were more confident in performing new skills, teaching new skills, and manipulating and handling the equipment while performing a new nursing skill in their current skills course compared to their confidence levels in previous skills courses. This suggests that the students' access and ability to practice using the customized lab kits in lab and at home increased their confidence levels in performing nursing skills.

#### **Instructor Perceptions In Relation To Students' Learned Nursing Skills Using Customized Lab Kits**

All instructors indicated that they had either good or excellent experience with use of the customized lab kits in their skills lab. In addition, all instructors indicated that the use of customized lab kits in their skills lab facilitated teaching of nursing skill to their students. Furthermore, most instructors



agreed that their students were more likely to practice nursing skills while having access to their own customized lab kit.

Overall, the skills lab instructors rated their students to have more confidence in performing nursing skill after having access to the customized lab kits and, for the most part, they were extremely satisfied with their experiences in teaching nursing skills to their students using the kits. An aspect of the kits that instructors liked most was that students always had the kit available to them for continued practice of the skills, they decreased the instructors' lab preparation time, and that they were convenient. In contrast, instructors indicated that the materials in the kits were not the same as those used in the clinical setting. To underscore their positive experiences with use of the kits in their labs, all of the instructors surveyed indicated that they would be extremely likely to recommend purchase of the customized lab kits for use future labs.

### **Limitations**

The current study had some limitations in that a small sample size (N = 5) was obtained for instructors of nursing skills laboratories. Due to the small sample of instructors, inferential statistical analyses could not be conducted for the instructors perceived level of their students' confidence in performing nursing skills with and without the customized lab kits. Although inferential analyses could not be conducted for instructors perceived confidence, descriptive statistical analyses indicate that all of the instructors surveyed had favourable opinions about use of the customized lab kits in their nursing skills laboratories.

Additionally, the survey questionnaires completed by both students and instructors were of self-report nature. Thus, to complete the surveys, students had to remember their experiences in prior nursing skills labs. It is possible that students did not accurately remember their experiences in previous nursing skills lab. This may explain why there was no observable difference in students' frustration

levels in previous skills lab where they did not have access to the customized lab kits in comparison to the current skills lab where the kits were available despite having favourable overall opinions related to use of the kits. Future studies would benefit from measuring academic success rates(i.e. grades in labs with and without use of the kits) of the practical nursing students.

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## Appendix A

### Participant Responses To Open-Ended Questions.

#### Student responses to the question “what did you like most about the customized lab kits?”

*Practicing at home with the actual equipment*

*Very helpful when practicing at home. Helped my grades a lot and my confidence!*

*The realistic approach*

*That I had my own supplies to practice with when ever I felt I needed to. I had it there to practice outside of the lab and outside the clinical setting and it was very nice to have that option. It allowed me to become more prepared for testing and to have the knowledge of how to perform the procedure because I practiced it many times in different settings.*

*Loved that they were supplied for us. They gave a great learning experience.*

*Being able to go home and practice and show my family what I got to learn in school. also I liked that we can do it as many times as we could. I enjoyed having these kits because they were fun to use and teach you all the principles to the skill we were learning.*

*I liked that they tried to make them as real as possible so we could know what to expect.*

*It was nice within the lab setting that we each had our own piece of equipment and did not have to wait while others finished up.*

*Being able to take them home, show them off and practice my skills afterhours. It makes it more comforting knowing you can open up a foley or a dressing tray and if you make a mistake its ok. You can seal it and retry as many time as you wish too... Great learning tool and makes learning more comfortable. Having the opportunity to practice more makes it easier.....*

*I liked that I had the kit to practice on when I was home. It was good additional practice after what I had learned in the lab.*

*Just having the kits in general was perfect. I could study on my own time and reuse them whenever I wanted to.*

*I was able to have the necessary equipment to practice at home. having to get tested the day after you learn a skill is extremely nerve racking and I never felt prepared. At least with the lab kits I had somewhat of a chance to pass because I was able to practice as much as I wanted to.*

*It was great to have something hands on to work with at home, makes things a lot less stressful to have things right in front of you to work with rather than waiting for the lab to open to get all the practice you need in before testing.*

*I liked that they were ours to keep and we could use them wherever and whenever we wanted.*

*I liked being able to have access to what I needed to practice before tests and to be able to become familiar with the equipment that I would be using.*

*I did like the fact that I could practice most skills with my kits.*

*How they were real to the clinical setting*

*It was nice to have the materials for lab and not have to share. It was also nice to have the materials at home to practice on my own time the best I could.*

*I liked the IV and Blood kits. I found them helpful to practice with before lab.*

*that we got to take them home and use them on our own time if needed*

*I can practice whenever I want as many times as I want at home.*

*having a more hands on experience*

*How I could have my own personal practice time whenever I pleased not only when the school made lab time available to me.*

*I liked having the kits at home to practice as they helped a lot.*

*practicing multiple times*

*I loved that I could practice at home before lab testing.*

*Could practice at home*

*Without the lab kits we could only practice in the lab setting which I found was difficult because you can only do the skills at school. With these kits we were able to practice whenever and wherever we pleased. I loved having the option to practice whenever I wanted.*

*Very organized. Good to practice with.*

*I liked that I had my own supplies to practice with at home and prepare for lab testing.*

*What I loved most about the customized lab kits was that they included everything that you needed. It gave me a great idea of what all the supplies was that I needed to complete the skill. It allowed me to have a better understanding on what to grab when I was actually performing the skill. I also loved that I could take the kit home with me and practice the skill at home. I find that I learn better when I can work in a quiet environment and work by myself.*

*We could take them home and practice with/on our friends/children*

*I liked that I was able to practice my skills at home with a kit that would be exactly like the one I would be tested with.*

*we can take them home to practice*

*It was really nice to know that if I did not get enough time to practice in lab that I have all the necessary supplies at home to continue to practice after school. Being able to do it in the privacy of my home helped me focus on the skill without any distractions.*

*I like that we can practice on our own time in our own setting. This course moved really quickly so I liked being able to have that extra practice time to feel more confident in the skill. I like how they are similar to the kits you see in the hospital so we are comfortable with the materials.*

*They gave me the hands on learning I need.*

*they have everything we needed, learned much more from them then learning from watching a demo*

*I like that it provided the opportunity to practice at home with the necessary equipment*

*that before a testing I could go home and practice the skill*

*I liked being able to practice at home.*

*I liked that we got to see what was in each kit.*

*I really liked that we were able to have our own supplies and be able to practice in and out of lab. I was able to take my kit home and practice at home as well as in the lab setting which helped my confidence in the skills which were being taught and what we were being tested on. It was nice to be able to have a mock version of what we would be seeing in the clinical setting and helped prepare me for the tasks I was asked to do in clinical.*

*I liked the opportunity to practice along with a video in order to learn how to more smoothly perform the skills for testing.*

*that they were a new way to learn hands on nursing skills, they are close if not exactly like what we see in a clinical setting, and they give you the independence to learn how to use it on your own time and in your own way and the time to get comfortable with the equipment provided.*

*That they were free*

*i didn't use them... oops*

*We would have the tools readily available for use at home to practice with and in the lab setting everyone has their own to practice with, eliminating time wasted waiting for tools. I especially enjoyed the penlight as it is the most useful in clinical, prior to the kit I did not have one and it was more difficult to find the flashlights on the floor.*

*Liked how they had all the tools we needed for our labs and that they were ours to take home with us at the end of the day. That we could then take them home and practice. Also they became helpful in the clinical setting. Helps for both learning and in the in the clinical experience.*

*made it easier to practice skills in lab and at home*

*It made available most of the tools necessary for the program offered in one parcel. We all had the same supplies in the class therefore we could follow along together as a whole.*

*Having the option to practice at home before and after lab. Also, not having to wait for sharing just a few between an entire class during lab*

*being able to follow along with demonstrations , without having to wait for supplies to practice.*

*The lab kits were great to have because when we learned new skills, you did not have to run out and buy different tools, they were all there in your kit ready to use!*

*I liked having them with me when I was home to practice with.*

*I liked that we could practice at home, & having the supplies that are our own to use, whenever we want.*

*Conveniently packaged and easy to bring along.*

*using items that we generally wouldn't use day to day*

*I liked having the necessary tools to learn from home considering we are an online class and teach ourselves at home.*

*Supplies given, pen light, measuring tools, ect. were extremely handy to have for hands on learning. Without having to wait a turn was great as well, since we were all given our own tools to use.*

*Being able to practice in lab when we were going over the skills*

*everything was there that you needed, and it was very helpful. We didn't have them first year so we appreciated them a lot second year.*

*I liked being able to have my own supplies to practice skills to benefit my learning outside of lab.*

*I loved everything that was in my kit, thought it was brilliant idea for nursing students, especially where we can not all afford the supplies needed.....I thought it was a great great idea and should be mandatory with the tuition paid.*

*The kits were very convenient and it was nice to have everything you need in one kit.*

*More hands on with tools we would not normally purchase.*

*Having the equipment for practice.*

*pen lights*

*Tuning fork pen light*

*I liked that we had a chance to practice with the lab kits while we not at school. It helped a little bit before testing, so that you could actually practice and not just read about how to do it.*

**Student responses to the question “what do you like least about the customized lab kits?”**

*they were not like the kits we were being tested on .*

*nothing, they were perfect!*

*carrying them around*

*That once I used the supplies so often, the supplies would get 'used up' looking and it was hard to use because the supplies have been practiced with so much therefore hindering my learning abilities because they have been tempered with so much.*

*I didn't like how we were made to use our own kits in the labs. The labs should have their own supplies and we should be able to use our own kits for home practice. We can use them for home but it is distracting when people forget to bring their kits on lab days and you have to share your supplies. It slows everything down. The kits are awesome though for student learning. The college itself needs more of their own supplies.*

*What I didn't like about the kits were only in some kits there were limited supply. I understand that they cant send a unlimited supply of equipment but maybe like a little more. Also in the dressing kit i wish they were the same size as the ones in the hospital there for you could get a feel for the size.*

*I did not like how they wound dressing kit was so small because it was harder for me to learn this skill.*

*I did not use them whatsoever outside of the lab setting. The lab kits were far much smaller than the ones within the hospital so it was hard to practice properly.*

*nothing really... They are built well and really accurate to the real thing.*

*That they did not always look the same as the real thing. It kind of confused me at first, but I learned not to go exactly by the kits that we have because they are not no00% similar to the real thing. I just learned to apply the same concept with the kits.*

*I didn't like some of the equipment in some kits. For example, the forceps were extremely hard to use in the catheter kit and the gloves were noly folded.*

*I wish there were more supplies in the kits, you can't reuse IV solution bags. I would always ration my supplies so I didn't have to use them up and be left with nothing.*

*The only thing I can say I didn't like was the fact that it wasn't exactly the same as the ones in the hospitals, they were very similar and that made it awesome, but when you learn on the ones here then go to the hospital it makes you have to step back and think about what you're doing.*



*I did not like that they were not exactly the same it made me lost when I was in the clinical setting and on lab testing days dealing with different materials. I think in the future they should be the exact same as the stuff used at the hospital!!*

*The difference between the kits and the real thing*

*The kits were really only a one time use. I could only just the wound care kit and the catheter kit more than once. In the IV kit I really could only just use it once or twice, because when the bags emptied then I couldn't practice anymore. It was actually really disappointing to be honest. A lot of the kits could only be used once or twice. Once you ran out of supplies we had to constantly ask the teachers for more anyways so it probably would have been better if they just supplied the objects needed anyways.*

*not enough supplies in the kits provided*

*I found it was great to have them but that we didn't always end up with a lot of practice time. I practice on my own at home but it is nice to have an instructor watch you perform a skill before testing or clinical to make sure you are doing it right.*

*I did not like the catheter and dressing kits as much because the trays were different then what they were in the hospital. The catheter should have had more lube and swabs so we could practice more than once.*

*that they weren't always exactly the same as the kits we got tested with*

*The "blood bag" stains all the things...learned that.*

*there didn't seem to me enough supplies to practice more than once..*

*NA*

*I found in the IV/blood one there was nothing to hang your blood. I had to use a coat hanger and a tack. If there was an extender to bend over a handle on a kitchen cupboard that would be helpful. or even a hook with an adhesive back or a suction cup. And anything wet was one time use like the brydene in the catheter one made a mess and was hard to put back to use again. same as alcohol swabs.*

*catheter squirted water everywhere*

*I wish there were more staples and sutures to take out in the dressing change kit.*

*They weren't the same as the ones that we were tested with.*

*I didn't like how we didn't have the exact tools that they would have in a hospital setting but I understand that they are expensive!*

*We only get one set. Could use extra materials for kit*

*nothing*

*Some of the kits were a little different then the ones in the hospital. Although; over all, they were great kits and I was glad that I had them to improve my learning.*

*They were smaller than the ones used in testing*

*Only thing that I didn't like were how some things did not match the kits we were tested on, but we were definitely able to use them and feel more confident with our skills. I feel that I have improved a lot with using the kits and that these will help future students as much as they have helped me.*

*we can only use them once*

*It was a bit of a hassle to bring them to and from school. I would have liked to just keep them for use at my house, and use the school's equipment when I was at school, that way I could save the supplies I was given to practice on my own time.*

*There wasn't really anything I didn't like about them I found them extremely helpful.*

*I would prefer that the kits were the EXACT ones used in the hospital as it can create surprises when you go to clinical.*

*loved them*

*no complaints*

*not exactly like the hospital kits which cause me some difficulty, but easily overcome.*

*I did not like that they were not the same as in the clinical setting.*

*That we had 4-5 different kits and having to carry them to and from home, or from lab to my locker etc. It would be easier if we were given them as needed instead of having them all at once and having to worry about transporting them back and forth as I did not use kits until we were shown and taught the actual skill.*

*reassembling the kits and the fact that latex was used as I couldn't bring it to a class based on a latex allergy in one of the staff members.*

*having to figure out how to fold them back up and put everything together so that it would be the same for the next use. also how some of the kits are a one time use, like the IV and blood admin kit.*

*nothing I disliked, wished we could have had the opportunity to have these done first year as well.*

*nothing*

*I felt I did not use it as much as it would have cost to put together.*

*nothing*

*The things I liked the least about the customized lab kits was that we had to remember to bring them with us to lab every time. Sometimes I forgot to bring it.*

*nothing. I thought that the kits were an excellent learning tool.*

*Some things we didn't use*

*I really didn't have any issue with them other than it would have been really useful for us as 2nd year students to have received them in our nost year of studies too.*

*There was nothing that I didn't like about the lab kits, other then I wish we would have been given them in first year as well.*

*nothing ?*

*there was nothing I did not like about the kit.....loved it all*

*nothing*

*Penlight just stopped working one day...*

*I wish we had them sooner*

*cotton balls*

*I didn't like how they aren't like the ones we actually use at school, or even at the hospital. They would be better to practice with if they were all the same.*

#### **Instructor responses to the question “what did you like most about the customized lab kits?”**

*Less lab prep time --- which is fabulous! Such a great time saver! Students were more engaged having the material/kits to go home and practice with. I also enjoyed having the same kit available to me in lab/class to demo. Student feedback was fantastic! They loved the wow factor of the kits. Very "real" -- much of the materials in the kits are the same/similar to the clinical setting.*

*the fact the students were able to take them home and practice, I feel greatly increased their performance*

*The student had ownership for the equipment and where thus able to practice with them at home. They also gained some new equipment they could utilize in clinical*

*I like the packaging of the customized lab kits. They definitely decreased the preparation for lab and were very convenient. I also like the fact the students took ownership of the kits. This gave them an increased sense of accountability and engaged them in further practice outside the lab setting.*

*I liked the fact that each student had their own setup, and had them easily available for practice. There could be no excuses for "not practicing" due to lack of equipment. I also liked the fact that the kit contained everything they needed except the "saline". Cost saving?*

#### **Instructor responses to the question “what did you like least about the customized lab kits?”**

*Size of sterile dressing tray --- Would like to have some items be more similar to the kits we use for testing.*

*I honestly don't have a complaint but my experience in the lab this term was minimal*

*Some of the equipment was not the same as they would see or use in the hospital setting*

*In the sterile dressing tray the tray was small and therefore it posed difficulties for some of the students in setting up the sterile field. I feel this can be improved upon through discussions with the supplier.*

*I would have preferred the actual dressing tray that the region's hospitals use to be in the kit, but failing that then could the trays be slightly larger. Although having a small tray forces them to pay attention to knowing where their hands are, it is not as realistic as it might be.*

## Appendix B

## Student Survey Questionnaire

<b>Background</b>
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Date: \_\_\_\_\_

**1. Gender**a. Female b. Male **2. Age** \_\_\_\_\_**3. Are you currently a:**a. First year practical nursing student b. Second year practical nursing student **4. Do you have a documented learning disability?**a. No b. Yes  Specify: \_\_\_\_\_

<b>Current Grades</b>
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**1. In general, would you say your grades in a previous skills course (ie: Introduction to Nursing Concepts & Skills, NCSI 1060) were:***Circle One*

Excellent.....1

Very Good.....2

Good.....3

Fair.....4

Poor.....5

**2. In general, would you say your grades in your current skills course are:***Circle One*

Excellent.....1

Very Good.....2

Good.....3

Fair.....4

Poor.....5

## Skills Acquisition

**1. How many times during a previous nursing skills course were you:**

	Never	Once	Twice	Three Times	Four or more
a. Frustrated while learning a nursing skill?	0	1	2	3	4
b. Fearful you would not be able to learn a nursing skill?	0	1	2	3	4
c. Unsuccessful in learning a nursing skill?	0	1	2	3	4

**2. How many times during your current skills course were you:**

	Never	Once	Twice	Three Times	Four or more
a. Frustrated while learning a nursing skill?	0	1	2	3	4
b. Fearful you would not be able to learn a nursing skill?	0	1	2	3	4
c. Unsuccessful in learning a nursing skill?	0	1	2	3	4

**3. Having customized lab kits facilitated my learning of nursing skills in the lab.**

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
	0	1	2	3	4
	No Value	Poor Value	Average Value	Good Value	Excellent Value

**4. How much value would you say the customized lab kits were in learning new skills?**

0

1

2

3

4

## Practice

1. During the past four months, how many times did you:

	Never	Once	Twice	Three Times	Four or more
a. Practice the skills using the customized lab kits <b>before lab testing</b> ?	0	1	2	3	4
b. Practice the skills using the customized lab kits <b>before clinical</b> ?	0	1	2	3	4

## Confidence Performing New Skills

For each of the following questions, please circle the number that corresponds with your confidence in performing nursing skill learned with the customized lab kits.

1. How confident are you in performing nursing skills learned **with** the customized labs in the clinical setting?
 

Not at all confident	_____	Very confident
	1 2 3 4 5 6 7 8 9 10	
  
2. How confident are you in teaching a nursing skill learned **with** the customized lab kit?
 

Not at all confident	_____	Very confident
	1 2 3 4 5 6 7 8 9 10	
  
3. How confident are you in collecting all necessary supplies needed to perform a nursing skill learned **with** the customized lab kits?
 

Not at all confident	_____	Very confident
	1 2 3 4 5 6 7 8 9 10	
  
4. How confident are you in manipulating or handling the equipment in performing a nursing skill learned **with** the customized lab kits?
 

Not at all confident	_____	Very confident
	1 2 3 4 5 6 7 8 9 10	



## Confidence Performing New Skills

For each of the following questions, please circle the number that corresponds with your confidence in performing nursing skill learned without the customized lab kits.

1. How confident are you in performing nursing skills learned **without** the customized labs in the clinical setting?
 

Not at all confident		Very confident
	1 2 3 4 5 6 7 8 9 10	
  
2. How confident are you in teaching a nursing skill learned **without** the customized lab kit?
 

Not at all confident		Very confident
	1 2 3 4 5 6 7 8 9 10	
  
3. How confident are you in collecting all necessary supplies needed to perform a nursing skill learned **without** the customized lab kits?
 

Not at all confident		Very confident
	1 2 3 4 5 6 7 8 9 10	
  
4. How confident are you in manipulating or handling the equipment in performing a nursing skill learned **without** the customized lab kits?
 

Not at all confident		Very confident
	1 2 3 4 5 6 7 8 9 10	

## General Overall Use

1. If we were able to purchase customized lab kits for future nursing skills labs, how likely would you be to support this recommendation?
 

Not at all Likely	0	Slightly Likely	1	Moderately Likely	2	Very Likely	3	Extremely Likely	4
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Extremely Dissatisfied	Quite Dissatisfied	Somewhat Dissatisfied	Neither Satisfied nor	Somewhat Satisfied	Quite Satisfied	Extremely Satisfied
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**Dissatisfied**

0                      1                      2                      3                      4                      5                      6

**2. Overall, are you satisfied with your experience learning nursing skills using these kits?**

**3. What did you like the most about the customized lab kits?**

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**4. What did you like the least about the customized lab kits?**

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**Thank you for participating in this study!**

## Instructor Survey Questionnaire

<b>Background</b>
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Date: \_\_\_\_\_

1. **Gender**
- a. Female
- b. Male

2. **Age** \_\_\_\_\_3. **How long have you been teaching?** \_\_\_\_\_

<b>Customized Lab Kits</b>
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**1. Overall how would you rate the customized lab kits:***Circle One*

Excellent.....1

Very Good.....2

Good.....3

Fair.....4

Poor.....5

		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neither Agree nor Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>2.</b>	Did the customized lab kits decrease your preparation time in setting up for nursing skills lab?	0	1	2	3	4
<b>3.</b>	Did you find it easier to engage the students in learning nursing skills with the customized lab kits?	0	1	2	3	4
<b>4.</b>	Did you find it easy to integrate the customized lab kits into your teaching practices in the skills labs?	0	1	2	3	4

5.	Did the customized lab kits facilitate your teaching of nursing skills?	0	1	2	3	4
6.	Did you observe students acquired higher grades in skills testing if skills were taught with the customized lab kits?	0	1	2	3	4
7.	Did you observe the students were more prepared to perform a nursing skill in the clinical setting if the skill was taught with a customized lab kit?	0	1	2	3	4
		<b>No Value</b>	<b>Poor Value</b>	<b>Average Value</b>	<b>Good Value</b>	<b>Excellent Value</b>
8.	How much value were the customized lab kits in teaching nursing skills?	0	1	2	3	4

### Skills Acquisition

		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neither Agree nor Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
1.	Did you observe students were more likely to acquire a skill if it was taught with a customized lab kit?	0	1	2	3	4

### Practice

		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neither Agree nor Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
1.	Did you observe the students were more inclined to practice a skill if it was taught with a customized lab kit?	0	1	2	3	4

### Confidence Performing New Skills

For each of the following questions, please circle the number that corresponds with your assesment of the students' confidence in performing nursing skills.

1. How confident are the nursing students in performing skills taught **with** the customized lab kits?
- |  |            |   |   |   |   |   |   |   |   |   |    |           |
|--|------------|---|---|---|---|---|---|---|---|---|----|-----------|
|  | Not at all |   |   |   |   |   |   |   |   |   |    | Very      |
|  | confident  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | confident |
2. How confident are the nursing students in performing skills taught **without** the customized lab kits?
- |  |            |   |   |   |   |   |   |   |   |   |    |           |
|--|------------|---|---|---|---|---|---|---|---|---|----|-----------|
|  | Not at all |   |   |   |   |   |   |   |   |   |    | Very      |
|  | confident  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | confident |

### General Overall Use

1. If we were able to purchase customized lab kits for future nursing skills labs how likely would you be to support this recommendation?
- |  |                              |                            |                              |                        |                             |
|--|------------------------------|----------------------------|------------------------------|------------------------|-----------------------------|
|  | <b>Not at all<br/>Likely</b> | <b>Slightly<br/>Likely</b> | <b>Moderately<br/>Likely</b> | <b>Very<br/>Likely</b> | <b>Extremely<br/>Likely</b> |
|  | 0                            | 1                          | 2                            | 3                      | 4                           |
2. Overall are you satisfied with your experience teaching nursing skills with these kits; dissatisfied with it; or neither satisfied or dissatisfied with it?

<b>Extremely Dissatisfie d</b>	<b>Quite Dissatisfie d</b>	<b>Somewhat Dissatisfied</b>	<b>Neither Satisfied nor Dissatisfied</b>	<b>Somewhat Satisfied</b>	<b>Quite Satisfied</b>	<b>Extremely Satisfied</b>
0	1	2	3	4	5	6

3. What did you like the most about the customized lab kits?

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**4. What did you like the least about the customized lab kits?**

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**Thank you for participating in this study!**