

An Interprofessional Thesis Project Taught Pedagogical Practices, Clinical Skills and Collaboration

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Abstract

As an interprofessional thesis work for nurse-paramedic student, we wanted to explore the aspects of learning and teaching in healthcare education and to study the educational needs among our target group.

A project group was formed by three students (one nurse-paramedic and two medical) and two teachers/professionals (a clinical nurse specialist and a pediatrician). As a production, we created a training course for professional nurse-paramedics for pediatric emergencies in Tampere region, where this kind of training possibilities were not available.

Experienced nurse-paramedics (n = 11) attended the training course, which was composed around student-centered learning methods. The training course consisted of preliminary assignment and a one-day training course, including interactive mini lessons, practical training sessions and simulation training. Themes of the training scenarios were selected due to most common dispatching codes on pediatric emergencies.

We students took actively part in planning, execution and feedback gathering. We consider this kind of bachelor's thesis rewarding because we learned about pedagogical practices, clinical skills and interprofessional collaboration. Students can do very different projects as theses and, with good orientation and guidance, they can also act as trainers for professionals together with experts.

Keywords: Health-Care Education; Interprofessional; Student-Centered Learning; Teaching; Paramedic

Introduction

Different ways of teaching and learning are often categorized as teacher-centered or student-centered [1], of which the teacher-centered is considered as the more traditional view [2]. One of the basic theories of the teacher-centered conceptions is the behavioral learning theory [2]. Behaviorism considers the student as an unreflective responder and the goal of teaching is to produce a behavioral result, which the student performs either correctly or incorrectly [3]. As a subcategory for the behavioral theory, the objectivist model of learning states that the goal of teaching is simply to transfer the knowledge from the expert to the learner [4]. An objectivist-based teaching requires less learning abilities from the student and therefore, it appears to be a more appropriate choice in lower levels of education [5]. Opposing the behavioral model, as a student-centered conception, the constructivist model acknowledges the past-experience of a

learner by stating that the educator cannot simply manipulate the mind of a learner and recreate their external reality [2]. Instead, the student is seen as an active learner and the role of the teacher is to help the student to process and understand the knowledge presented [4]. Therefore, every student constructs and molds their own knowledge [3].

Moving from the teacher-centered conception towards the student-centered, the responsibility and the required skillset of the student increases [1]. At the university level of education, the years of formal education that the student has worked through prior to the university, have taught the student much about their own individual learning process [5]. It can be argued, that if the students have an existing level of education and experience with hypothesizing and predicting, researching answers and investigating, the constructivist model is more appropriate to use [5]. When designing a course, it is tempting to consider the mind of the learner as a blank paper on which the outline is being scratched, yet this is not the case [6]. Experimental learning theory describes learning as a process whereby concepts are derived by and continuously modified by experience and therefore an educator’s job is not only to implant new ideas but also to dispose of or modify old ones [6]. As a learning process is variable between different learners and learning themes, the use of various teaching methods rather than a single one is recommended [7].

Because the issues, that today’s health care patients face, are often complex [8], these situations can be best handled by interprofessional teams [9]. Therefore, all health professionals should expect their education and training include collaborative learning with other professions [10]. Interprofessional education occurs when students from two or more professions learn about, from and with each other to enable effective collaboration [11-13]. As many prior studies state, interprofessional education helps to improve collaboration and patient care [9,11-14]. Working with university students and highly experienced professionals, we wanted to implement the student-centered model of learning to our learning processes. As a new kind of bachelor’s thesis, we wanted to carry this project as an interprofessional collaboration of the two universities and to test the potential of the student-led project with a specific goal. This article describes our learning process in an interprofessional team, while planning an additional training program for healthcare professionals.

Methods

A nurse-paramedic student (J.P) shared an idea for creating a training course on pediatric emergencies as a bachelor’s thesis work with his pediatric care teacher in December 2018. An interprofessional student-led project group including one nurse-paramedic student, two medical students (T.J. & L.M.), a clinical nurse specialist from Tampere University of Applied Sciences and a pediatrician and executive director at Tampere Centre for Skills Training and Simulation (a training centre owned by Tampere University, Tampere University of Applied Sciences and Pirkanmaa Hospital District) was formed in January 2019. The timeline and contents of the project are described in figure 1.

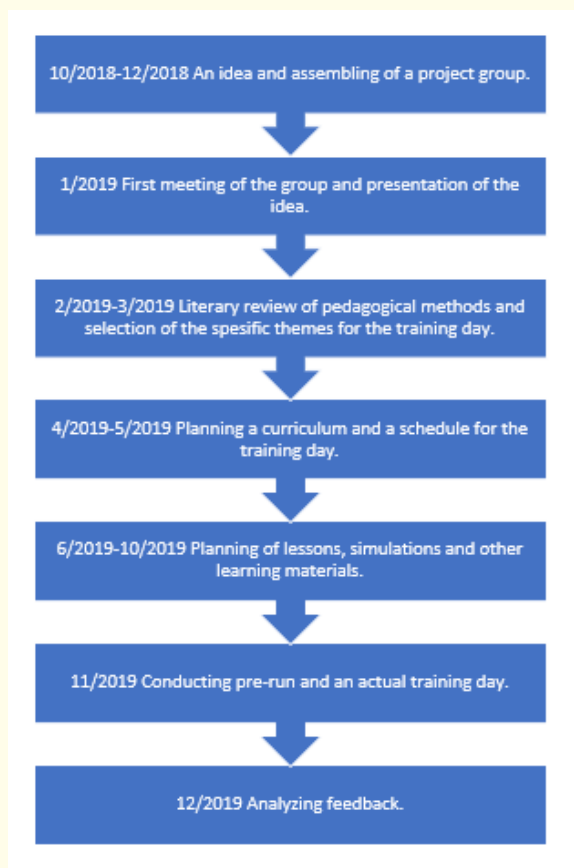


Figure 1: The timeline of the project.

The aim of the project was to explore the aspects of learning and teaching in healthcare education. We also wanted to rehearse the essential features of the pediatric emergency care and study the educational needs among professionals.

During spring 2019, we studied different learning and teaching theories using keywords such as education, pedagogy, teaching, graduate, teaching materials, interprofessional, paramedic, medicine, simulation, when searching information.

To determine specific themes and educational goals of the training day, we got acquainted with pediatric emergencies literature, discussed with our mentors and formed a qualitative questionnaire regarding the topics which paramedics find challenging in emergency care of pediatric patients. The questions were the following:

1. What kind of pediatric patients have you encountered when working as a paramedic and what were the reasons that resulted to the emergency call?
2. What kind of pediatric patients have been challenging for you to operate with?
3. What kind of further education would you wish for considering the emergency care of pediatric patients?

The questionnaire was distributed to 10 professionals and 30 graduating nurse-paramedic students. 30% of the population (n = 12) answered the questionnaire, including three professionals and nine graduating students. Two topics standing out from the answers were taking care of the parents on scene and understanding the differences between the physiological characteristics between adults and children. These topics were also discussed in the pediatric emergencies literature and therefore they were selected as our main themes for the training day in a mutual understanding with our mentors.

An invitation poster was sent to six different organizations providing paramedic services located in four different regions in Finland. Eleven nurse-paramedics signed up for the course, with varying work experience from 2 years to more than 20 years.

After the selection of the themes and the pedagogical methods, based on studied literature of pediatric emergency care, we planned the learning materials of our training program. The themes of the simulation scenarios and training sessions were selected due to the most common dispatching codes on pediatric emergencies.

A preliminary learning material for the training course was created and placed to an online Moodle-based platform. The aim of the preliminary learning material was to prepare the participants for the training day by studying the basics of normal physiological, neurological, anatomical and emotional development of children aged between 3 months to 12 years. Acknowledging different learners, we used different types of teaching methods such as short text-based presentations, learning games and a comprehensive printable summary for the review. In addition, the participants were asked to answer three short questions regarding situations they had found challenging in terms of interaction and co-operation with the parents of the child patients. The answers were used for optimizing the content of one of the interactive lectures of the upcoming training day.

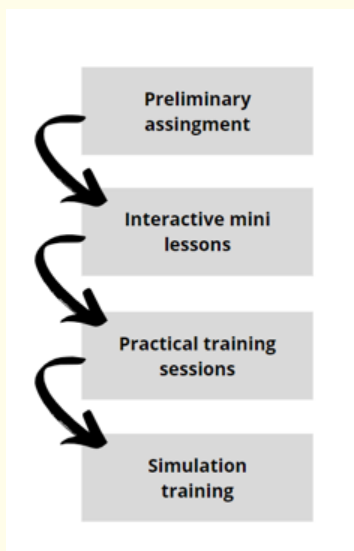


Figure 2: The different stages of the training program.

The training day included two interactive mini lessons where the physiological characteristics of children and co-operation with parents were discussed. The duration of each lesson was 30 minutes and worked as an introduction for the upcoming themes of the training day. In two separate training sessions, the participants practiced securing an airway, manual ventilation, intra-osseous fluid resuscitation and spine immobilization of a trauma patient. Three different simulation scenarios (breathing difficulties, scald and intoxication) were arranged. Every participant completed one scenario and spectated the other ones through audio-video system. Tampere Centre for Skills Training and Simulation provided the training environment and the equipment needed.

Prior to the actual training day, a pre-run of the time schedule was conducted to test the functionality of the curriculum and to practice all the upcoming clinical skills. To collect feedback of the learning process, the participants took part in a feedback discussion and filled a written semi-structured feedback form anonymously after the active training sessions. The feedback was analyzed in detail within the project group in December 2019.

Results

Being a student-led project, we stayed active and carried the major workload throughout the project. Two experts were involved with every major decision along the way and gave feedback, guided and supported our progress. The project was highly positive experience for us, and we were able to learn considerably while working in this kind of goal-directed project. We explored different kinds of teaching methods and theories used in healthcare education. We had an opportunity to experience the process on organizing a high-quality training program with different pedagogical methods and to create a new learning content in a specific training program. While planning a training course for pediatric care and training clinical skills on our own, we were able to improve our own skillset with pediatric patients as future healthcare professionals. We learned the physiological characteristics of children along with suitable nursing methods and the central features of the pediatric emergency care. The conducted pre-run training day strengthened our own hands-on skills around pediatric patients and increased our own self-confidence prior to the actual training day. We believe that this helped our own presentations in front of the professional participants.

Working in an interprofessional project group improved our communication and cooperation skills with different professional groups. As a student, it was also highly satisfying educational experience to work as a leader of a project group. With the interprofessional team including perspectives from the medical and the nursing standpoint, we were able to learn the different steps of treatment in emergency care protocols and see the differing roles of medical emergency personnel, nurses and physicians in different emergency situations. It was also a new experience for us to work as a trainer with the target group only consisting of professionals. The project boosted our self-confidence to work in new kind of environments and to perform in front of highly motivated participants. While working on the project, we learned a lot of ourselves and found the achievable outcomes made possible by hard work and a highly motivated team. It is important to support other members of the team and utilize the power of teamwork.

Eleven participants attended the training course and gave feedback from the training program. The participants felt positively about the ascending curriculum of the training course and were satisfied that interprofessional teaching team gave them opportunities to get answers to occurring questions. The participants felt that they had time to discuss their own ideas and there was no feeling of rush during the day.

The interactive mini lessons of the day were experienced important considering the curriculum. One participant suggested that the data considering the physiological characteristics could be taught in preliminary assignment. The practical skills sessions got highly positive feedback without an exception. There is a continuous need for this kind of training opportunity. Participants were mostly pleased with working on the manual ventilation of pediatric patient mannequin and most of them praised the training environment of the Tampere Centre of Skills Training and Simulation as an essential part of the functional training course. The simulation training was experienced motivating and challenging. A post-event debriefing discussion was conducted after every simulation scenario, which initiated plenty of conversation between the participants themselves and the specialists attending. These debriefing discussions gave the participants an

opportunity to reflect their own performance with the support of their peers. A positive and acceptable atmosphere was felt throughout the day.

Overall, our project was highly successful. Some of the participants had some difficulties working with the Moodle-based virtual platform prior to the training. During the simulations there was a short-term connection problem with simulation mannequin. These kinds of problems are quite common when technology is involved and were handled quickly so that the training program was not disturbed.

Discussion

As a new kind of bachelor's thesis, we wanted to study different aspects of learning and teaching in healthcare education and find out whether students can teach professionals in guidance of specialists. As a product, we wanted to create an additional training course for professional nurse-paramedics for pediatric emergencies. The project was carried out as an interprofessional collaboration of the two universities. Because this was a student-led project, the importance of the active mentors from both facilities was recognized [9,15]. Mentors were a clinical nurse specialist at Tampere University of Applied Sciences and a pediatrician and executive director at Tampere Centre for Skills Training and Simulation. They both had over 20 years of clinical experience in pediatric care.

Placing ourselves on the role of the teacher helped us as students to comprehend the qualities of a good teacher. We realized that a good teacher is not solely defined by their substantial knowledge, but also by their means to adjust their own way of acting due to the needs and expectations of the students [7]. Even with the years of prior studying, we didn't have a lot of knowledge on different learning theories before the project. By studying the different ways of teaching, we learned a lot about the ways of learning that we can utilize in the future. We had already recognized some learning methods that we had found suitable for ourselves. By using different teaching methods in the curriculum, we were able to strengthen the features that we found challenging. The saying: "you learn the best by teaching others" seems to be correct, as we seemed to learn extensively as we were held accountable of the learning of others too. It is likely, that in some point of health care career, one will also teach others around, and our experience on the project will certainly strengthen our abilities as future instructors.

In our meetings we shared ideas and discussed differing learning and teaching theories. Simultaneously we discussed about the learning methods we would use in the training day and what would be the learning goals of the day. Two specialists guided us, gave us constant feedback on our progress and helped us to unite our differing views on the complex matters. The medical students did not have experience of out of hospital emergency situations, so the experience that the graduating nurse-paramedic student had, was highly influential. Interactive interprofessional collaboration enabled us the possibility to discuss about different perspectives on the subjects, which amplified our knowledge on the clinical features of pediatric care and clarified the differing expectations, needs, strengths and responsibilities of the other professions in the interprofessional health care team. To improve the functionality of a health care team, the highlight has been in the interprofessional education where health care professionals can work together as a team [13]. Working in an interprofessional environment enhances the participant's own professional identity and increases the understanding of other professional's roles on the health care team [9] as well as it improves health outcomes [11]. To achieve effective learning outcomes, every learner needs new experiences and constant feedback [6].

Because the participants of the training day had experience of the substance, problem solving, teaching and training, their qualities as learners suited better with the student-centered learning conceptions [1,2,4]. As instructors, we wanted to merely guide their training opportunities, challenge their own ideas on the substance with newly studied information and give feedback on their own practices. Student-centered conceptions of learning state that because everyone's reality differs through their past experiences and biases, individuals are assumed to learn better when they are forced to discover things themselves than rather when they are told [2]. The aim of the learning process is understanding, which the student demonstrates by applying the knowledge instead of replication of information [4]. Learning focuses on discovering conceptual relationships and exploring multiple perspectives on an issue [2], which is essential while working the complex issues in health care [8,9]. As the student-centered conceptions assume, knowledge is created as it is shared in opti-

mal conditions such as small groups, and the implicit goal of learning is also improving communication skills [2]. During our training day, we encouraged the participants to discuss about their own views on the topics at hand, and to challenge different ideas presented. With the support from our experts, they were able to find answers to their own questions while working in small groups with their peers. After the performed actions of the participants, we encouraged them to use self-reflective learning methods as much as possible, by posing different questions and solutions.

By using virtual platform on the preliminary material, we allowed participants to access the material at a time of their convenience and use the amount of time they wanted, which is also recommended in online course pedagogy [5]. The participants were also able to present their experiences of encountering parents on the field and present open questions considering the pediatric care in advance.

The training day included two interactive mini lessons where the physiological characteristics of children and co-operation with the parents was discussed. The first lesson focused on the physiological characteristics and broadened the information processed in the preliminary material. The purpose of the second lesson was to generate conversation about the challenging situations that the medical emergency personnel may face considering the parents of a child in scene. Due to the wide experience of the participants, we were able to generate multifaceted discussion about their past experiences and to suggest different types of manners of approach to these situations in the future, based on comprehensive acquainting of the literature of the subject.

Health care professionals who perform clinical procedures must be trained to perform these procedures safely and well. Procedural skills can be taught in a variety of educational methods, but the most common one has still been the traditional demonstration followed by supervised performance [16]. While practicing the procedures for breathing control and fluid resuscitation, the participants got constant feedback of the mechanical mannequins and from the instructor. Because traffic accidents and high-energy falls are one of the most common dispatching codes for pediatric patients in Finland [17], we wanted to implement the handling of a pediatric trauma patient into our training session. In the training session, the participants performed an exercise involving the spine immobilization of a volunteering 9-year-old child. A real child as a patient was experienced positive and efficient by the participants.

Simulation training is a very useful tool in healthcare training and it has been increasingly used over the past two decades [11,14,18-20]. The simulation training most likely improves clinical performance and patient safety [21] and is also a very useful tool in capturing the clinical variations found in the patient populations [19]. We used the simulation training to add “real-life like” practice scenarios to the curriculum, which combined all the prior learning subjects of the day. The post-event debriefing session was focused on three different key points (assessing the immediate vital signs of the patient, supporting the patient’s vital functions and the overall teamwork). When using simulation training, the feedback is a crucial part of the effective learning process [19]. In the post-event debriefing session the whole scenario often unfolds to all participants in its entirety [19] and through reflection the learner can reconstruct the learning experience and thereby understand its meaning [22]. If the simulation scenario is experienced problematic, a reflection during the debriefing is a keystone of simulation-based learning [22]. Our general debriefing structure, which is described in Motola’s article [19], began with participant reactions and feelings, which was followed by detailed analysis of the performed actions, and ended with a discussion of the lessons learned.

As every learner’s reality has molded differently through experience [2], every individual enters every learning situation with different level of knowledge about the topic at hand [6]. Because of the various experience between our participants, we wanted to give them an opportunity to use their own experience as their advantage, as well as challenge the beliefs they might have about the topic. Kolb’s experimental learning process presents that learners need four different kinds of abilities through their learning process; concrete experience abilities, reflective observation abilities, abstract conceptualization abilities and active experimentation [6]. Our curriculum adapted these abilities throughout the learning process. All our participants were actively working health care professionals. Several of our participants were highly experienced having worked as a nurse-paramedic up to 20 years. As our curriculum included a lot of discussion and cooperative studying, there was a constant reflection and observation ongoing, using several different perspectives. While studying

our theoretical learning material and interactive lessons, the participants had to use their abstract conceptualization abilities. Then while working in the skill sessions and simulations, the participants actively experimented their skills by using theory knowledge on solving different type of “real-life like” problems. Our whole learning process was sustained on constant feedback, which is also highlighted in the experimental learning model [6].

The feedback showed that the participants experienced the learning results significant while attending the training program. Even though all our participants represented a single profession, all of them favored the interprofessional assembling of the instructors and endorsed the idea of increasing these type of training events for medical emergency personnel. They were extremely satisfied about the fact that their experience was considered while planning the curriculum. They reported that their skillset was tested in a challenging level, but in a positive and a permissive atmosphere throughout the day. As Felder states, different types of students favor different types of teaching methods [7], also our feedback varied in individual levels. The participants were pleased on the extend of the theory material, whereas some of the participants suggested the training day to become a two-day event. In the simulation training, we adjusted the challenge of the training circumstances by adjusting the behavior of the parents on scene, which most of the participants felt intriguing and one frustrating.

While planning our schedule, we wanted to make sure that the participants would have time to discuss their own views and contrast possible new practices with the previously learned ones with their peers and the instructors. There was a constant flow of discussion throughout the day between the participants and the instructors. During the simulation training, the debriefing discussions took twice the amount of time as the actual scenario lasted. The classroom was arranged in a circular shape, where all the individuals could hear and see everyone during the conversation. The final feedback discussion of the training program took 30 minutes, where every individual addressed their own feelings about the day.

Limitation of the Study

The limitations of the study were the longitude of the enhanced skillset is not monitored and the number of participants was minor. As it is known that emergency care related topics are associated with a decay in knowledge and skill after a period of time [23]. The study should also sort the features of the skills that were enhanced long-term and which of the skills needs more frequent training to maintain. This would give us reliable information of the impact of different teaching methods.

Conclusion

As a conclusion, this type of thesis is a diverse learning process that teaches clinical, social and group work skills as well as pedagogical practices. Students can do very different projects as theses and, with good orientation and guidance, they can also act as trainers for professionals together with experts. To our experience, interprofessional theses are beneficial and teach students many skills necessary in the health care professions.

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