# Opportunities to Improve Respiratory Therapy Education: The Case for High-Fidelity Simulations (HFS) in Pre-Clinical Education.

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**Abstract**

The last eleven years has seen my evolution from student of respiratory therapy to clinical instructor, and now to program instructor. The first-hand experience gained from being a clinical student and working alongside them has revealed a common theme, the difficulty transitioning from didactic learning to clinical application due to a sense of unpreparedness for the clinical environment. Review of educational literature highlights the enhanced learning and proficiency in healthcare programs when clinical experience, real-life or simulated, occurs in psychologically safe environments that satisfy the stages of experiential learning. While real-life experience is preferred, those opportunities are often unpredictable and inconsistent, proving unreliable for effective learning. Integration of high-fidelity simulations (HFS) is an effective tool employed to deliver reproducible learning scenarios in supportive and holistic environments. Due to the demand for proficient respiratory therapy graduates nation-wide, I advocate for the increased incorporation of HFS into pre-clinical program content, facilitated by educators appreciating the requirements for effective experiential learning. The increased opportunity for HFS will elevate student's proficiency, competence, and confidence prior to clinical experience, as well as better prepare them for the realities of healthcare.

Keywords: experiential learning, high-fidelity simulations (HFS), Respiratory Therapy, healthcare programs, healthcare curriculum, pre-clinical

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## Chapter One: Introduction

Have you ever been nervous performing a skill for the first time? Felt uncomfortable being watched? My first experience as a clinical student respiratory therapist included that and more. Mind frozen, muscles not responding, knowledge gone in an instant, feelings of incompetence and, sweating as though a race had been run were all present. It was a terrible experience that has remained with me to this day. The positive side of it? The experience highlighted the importance of establishing foundational skills prior to the commencement of a clinical practicum for respiratory therapy students. Every time I remember the experience, it raises the question, what is lacking in healthcare program curricula that might better prepare students for the realities of clinical practice? What could have better prepared me for that moment? To gain perspective on what I believe the answer is, a brief exploration of both my personal and professional experiences is included to provide context.

### The Evolution of Lindsay

#### *Personal Journey*

Over twenty years of education that has included learning struggles, self-doubt, and seeking to understand oneself has revealed one truth. As a learner, I do not effectively learn through lecture alone. The process in which my mind conceptualizes information requires the inclusion of both context and positive experience that without, theoretical comprehension is negatively impacted.

Conscious of this, I have come to realize that the majority of my formal education has shared a common unfortunate theme, the absence of experiential learning. Not all educational opportunities lacked this, though even back in the first grade while attempting to master cursive writing in class and feeling frustrated, I was only successful following the intervention of my

older sister. Creating a positive and safe learning environment and alternative ways of approaching the skill, she was able to break down the curves, guide my hand, and help me make the connections between the letters.

***Professional Journey***

In 2011, as a mature student, I was offered a spot in the Respiratory Therapy program at Thompson Rivers University (TRU) in Kamloops, British Columbia. At a crossroads in my life, needing to find a career and life path, I accepted without knowing much about the profession and lucked out. I absolutely loved all that it encompassed. The theory, application, faculty, and institution were a stark contrast to the previous post-secondary education I had received. Theoretical course work was reinforced with affiliated laboratory application offered in psychologically safe and positive environments where students built their competency and confidence prior to the clinical practicum.

The program, offered as a diploma or degree option, saw me complete two years of didactic education before embarking on a 47-week clinical practicum rotating through three clinical sites. That first moment interacting with a patient on my own was a moment of sheer terror and I froze. According to preceptors, my experience was not unusual and that with time the sensation of unpreparedness would eventually subside. That moment took four months. Four of the eleven months dedicated to the development of my clinical competencies were lost to self-doubt and uncertainty, negatively impacting the intent of the clinical practicum.

Graduating in the spring of 2014 and officially becoming a Registered Respiratory Therapist (RRT), off I went, working bedside with the extremely ill and complex patients that needed my expertise. The experience was extremely fulfilling, and I loved every minute of it, what more could I need? Two years later, in 2016, I was invited to apply for and successfully

became a Sessional Laboratory instructor in the very program that molded me. This was an opportunity to impart my love of the profession and any personal experiences with the next generation of RRTs. The joy of seeing students conquer the complexities of program content reinforced that I was meant to educate. However, it also highlighted what I suspected were gaps in the preparation for clinical learning.

Working as both a clinical respiratory therapist and as an instructor continued until April of 2020, when respiratory therapy clinical students returned to my hospital. After a six-year absence, the return of students mandated the need for a Clinical Site Coordinator (CSC), for which I was the successful applicant. Serving as the CSC and continuing as a sessional instructor, I once again observed first-hand the gaps in student preparation, just as I had personally experienced. The lack of understanding of the clinical world, expectations, integration of skills, and interprofessional communication were just the tip of the iceberg. The students were not at the optimal starting line as they should have been, but were ten feet behind and moving at a snail's pace. Feedback through the first few months supported my assessment, both students and preceptors felt that the students were ill-equipped for clinical practice, overwhelming both groups tasked with finding learning opportunities and making up the disparities.

At this point, in the fall of 2022, I am now a permanent member of the Respiratory Therapy program that means so much to me. As a Tenure Track Assistant Teaching Professor, I am now in a position to review and revise current program curricula and will strive to improve student experience.

***Educational Journey***

In conjunction with my professional opportunities, I took on the task of completing the Master of Education (M.Ed.) program through TRU. Implementing new theoretical concepts in real-time proved to enhance prospective learning, starting with the selection of a research proposal topic for the first course, *Research Methods.* Coinciding with the return of clinical students and my new role as CSC, inquiry into the feasibility and benefits of simulations in pre-clinical education to improve student preparation was the natural choice. The selection of this topic served as the springboard for subsequent courses, culminating in the generation of this final discourse. Early in the program, the introduction to the likes of John Dewey and Paulo Freire and their learning by doing/problem-posing (Gadotti & Torres, 2009, p. 1259; Hildebrand, 2018, Section 5.1) pedagogies served as the foundation to my very own educational philosophy, though it was not until the following summer in *Inquiry Across the Curriculum* that I truly solidified my educational perspective. The course material provided a major moment for me as it returned Freire into the fold and included the works of bell hooks, who has and will forever change the way I view education. Though the introduction to bell hooks was brief, it established the foundation for my teaching methods, to work as an educational guide, rather than the director of the learning journey. Focusing on the holistic development, the whole of the student, rather than simply intellectual development will best serve to develop my students as healthcare caregivers, rather than practitioners.

**Topic Justification**

As presented by both personal and professional experiences, greater accessibility to experiential learning prior to entrance into a clinical practicum would have improved the development of my clinical competencies. The incorporation of experiential learning through the use of simulations into healthcare programs such as respiratory therapy does occur regularly,

though the opportunities at TRU are currently limited to twice a semester in the pre-clinical year of learning. In previous years, this restricted exposure to contextual and experiential learning did not serve to negatively impact clinical learners. More recently, considering the current state of healthcare within Canada, these limitations have perhaps become the proverbial 'straw' serving to break the camel's back. With the emergence of the most recent and still ongoing Covid-19 pandemic serving to further increase patient acuity and complexity, the combination of decreasing workforces, increasing workload, and stagnant pay, are making staff grow tired. Placing the further expectation upon these weary healthcare 'heroes' to find learning opportunities, educate and form the next generation of RRTs is no longer as effective as it might have once been. In turn, the learning and the experiences that clinical students are provided with are inconsistent and suboptimal, thus negatively impacting their satisfaction and commitment to the profession along with the development of their abilities. If this occurrence is noticeable within the Respiratory Therapy profession, undoubtedly other healthcare professions and associated programs are weathering the same storm.

**The Argument**

Although not a new teaching tool, high-fidelity simulations (HFS) are not playing as big of a role in healthcare programs as they could (Curl et al., 2016, p. 72). To improve the proficiency, competence, and confidence of healthcare graduates (Rodger et al., 2007, p. 59), specifically respiratory therapy students, I claim that the increased incorporation of HFS into pre-clinical program curricula will improve learning and better prepare students for modern healthcare (Bogossian et al., 2019, p. 3760). As highlighted by John Dewey and David A. Kolb (Murray, 2018, p. 1), not all experiential learning, real-life or simulated, can ensure beneficial learning is acquired and misinformation is avoided. The fickleness of real-life opportunities

risks the reliable acquisition of knowledge by respiratory therapy students, adding another reason to push for the inclusion of predictably complex and purposeful simulated learning scenarios (Rodger et al., 2007, p. 57; Curl et al., 2016, p. 72-73; Murray, 2018, pp. 1-5; Alghamdi et al., 2019, p. 161).

### *Making the Argument*

This paper seeks to identify the opportunities to increase HFS integration into pre-clinical respiratory therapy curricula to optimize clinical education and graduate performance. To achieve this, a literature review in the second chapter will examine the educational philosophers that serve as both inspiration to my educational philosophy and foundation to my claim. John Dewey, Paulo Freire, and David A. Kolb's Four Stages of Experiential Learning will be explored while acknowledging connections to bell hooks. Comparison of both real-time learning experiences and high-fidelity simulations (HFS) to Kolb's four learning stages will follow to highlight where connections and disconnections exist. Review of available literature investigating the current integration of HFS into healthcare program curricula and its impact on student performance, and the current state of HFS integration into Canadian respiratory therapy programs will be completed. The third chapter will look at the appropriateness of implementing my claim by reflecting upon my own personal and professional experiences, exploring the current incorporation of HFS in pre-clinical curriculum at Thompson Rivers University (TRU) and the possibilities of creating a program component dedicated to HFS.

The paper then will conclude with a summary of the current literature and argument, the implications of applying the claim, and the success of the argument.

## Chapter Two: Literature Review

### My Educational Philosophy

To truly investigate the basis behind my argument, that the proficiency, competence, and confidence of respiratory therapy graduates will improve with increased incorporation of High-Fidelity Simulations (HFS) into pre-clincal program curriculum, I believe it is important to begin by providing the foundation for my argument by including the key educational philosophers that served as the 'grandfathers' to my philosophy. As it stands, my educational philosophy centers around the concept of experiential learning as a method to foster learner development by bringing contextual and emotional connections to the learners' individual experiences.

Experiential learning opportunities are not required to be overly elaborate or complex, but simply require anything that generates contextual and emotional experiences for the learner. Two examples commonly employed are the sharing of personal experiences, allowing the student to experience situations through the eyes of another, or HFS that immerse the student in their own contextual experience to generate learning. Contextual and emotional experiences enhance learner development by satisfying the various recognized adult learning styles (tactile, audio, visual, etc.). Both methods enable the inclusion of another important aspect of my educational philosophy, the establishment of safe and supportive learning environments. Normalizing the challenges that come with adult learning is important to ensure the learner feels comfortable to make errors, reflect, analyze, and take away the valuable learning that arises from the experience.

As noted above, this next section will provide a brief synopsis of the three experiential learning philosophers that most impacted my growth as an educator. One note to make is the inclusion of bell hooks, a fourth philosopher who does not follow the experiential learning pathway, though whose teachings are applicable in every facet of my practice.

***Connections to Contributing Philosophers***

**Paulo Freire – Knowledge is Learned from the Doing, not the Banking of Education.** The father of reputing the 'banking' system of education (Gadotti & Torres, 2009, p. 1259; hooks, 1994, p. 14) in which the student is viewed simply as an empty vessel waiting unquestioningly to be filled with pre-determined information, Paulo Freire was a voice that was loud and clear. His view that the educator and the learner, in an egalitarian relationship, are able to engage in dialogue regarding concepts and issues (Gadotti & Torres, 2009, p. 1259) mirrored what bell hooks touted as raising the critical awareness of the learner (hooks, 1994, p.13). This inquisitive dialogue led to the concept of critical consciousness (Mithra, 2014, p. 101), which for Freire was necessary to rise above oppressive forces (Mithra, 2014, p. 99). The inquisitive dialogue is altered by hooks' interpretation and application that changes the learner into an active learning partner (1994, p. 14). This development of critical consciousness increases the analytical habits with which a learner approaches opportunities (Mithra, 2014, pp. 102-103) to question, engage, reflect, and discover the deeper meanings to further their learning. The critical consciousness, taking the learner from passive observer to engaged participant, is the necessary first step in experiential learning and supportive of the argument for increased HFS in healthcare curriculum.

**John Dewey – Experiential Learning: The Value of Doing.** Following suit with the influence of Paulo Freire, John Dewey's conception of the progressive and cyclical nature of experiential learning transitions the student from a passive learner, lacking confidence in their abilities, to an engaged learner reflecting upon and incorporating previously learned lessons to resolve a problem (Hildebrand, 2018, Section 5.1). The transformation from passive to active learner does not occur spontaneously, rather it requires the incorporation of experiential learning opportunities combined with pre-planned periods of reflection and learning to truly become

critically engaged (Kolb & Kolb, 2017, p. 12; Murray, 2018, p. 3; Stock & Kolb, 2021, p. 4). The process of experiencing, reflecting, analyzing, and performing replaces the 'banking' method of education (Gadotti & Torres, 2009, p. 1259; hooks, 1994, p. 14). Learning activities incorporating relatable assignments are to be based on more than simply the task at hand and should take into consideration the social and cultural learning that may occur during experiential learning (Hildebrand, 2018, Section 5.1). bell hooks considered the opportunity to influence more than simply the focused subject matter a necessity in the holistic evolution of students to truly begin learning (hooks, 1994, p. 13). The personal context, emotion, and experience that each learner undergoes in high-fidelity simulations satisfies what both John Dewey and bell hooks deemed important in each and every learning opportunity. Though John Dewey's application focus was children (Hildebrand, 2018, Section 5.1), I believe that his concepts are appropriate for any age of learner, and thus incorporate them into my argument that HFS will improve the learning and preparation of healthcare students for their clinical practicums. Just as John Dewey noted the cyclical nature of learning and the importance of reflecting upon learning experiences, so does this next educational philosopher, David A. Kolb (Murray, 2018, p. 3).

**David A. Kolb – Four Stages of Experiential Learning Theory.** The final theorist incorporated into my personal philosophy is also the founder of the Experiential Learning Theory (ELT) that serves as the criteria against which I form my argument for increased HFS in pre-clinical respiratory therapy curriculum. First presented in 1984, Kolb's theory arose from experiential learning theorized by John Dewey (Kolb & Kolb, 2017, p. 10). The basis behind ELT is a theory of repetitive learning that follows four key stages; concrete experience, reflective observation, abstract conceptualization, and active experimentation; before beginning anew (Murray, 2018, p. 2; Stock & Kolb, 2021, p. 4; Wall, 2017, p. 75). This cyclical path serves to

better engage the student during the learning process as information is analyzed, transformed, and employed; a linear path, the more conventional method of education, leaves the learner passive and unengaged (Kolb & Kolb, 2017, p. 15; Stock & Kolb, 2021, p. 5). The structured experience of HFS is able to satisfy all of Kolb's stages while ensuring psychological safety and controlled learning objectives.

***Concrete Experience/Experiencing.*** Though the label has been transformed, the first concept of ELT has remained the same. An encounter, a conversation, simulation, class, or lab lecture all provide the opportunity for the student to experience a level of learning that triggers analysis, thought or review (Stock & Kolb, 2021, p. 4). The act of experiencing a learning opportunity occurs through an individual lens, colored from previous experiences, and formed from the generation of perceptions arising from our senses, emotions, and context (Murray, 2018, p. 5; Stock & Kolb, 2021, p. 5).

***Reflective Observation/Reflecting.*** Once an experience has occurred, the opportunity to reflect back and consider what occurred is what John Dewey and David A. Kolb both consider extremely important to effective learning (Murray, 2018, p. 2). Reflection provides the break in learning for the student to become aware and understand components of the learning opportunity (Stock & Kolb, 2021, p. 4). This reflection can occur as an individual, one on one, or in a group setting.

***Abstract Conceptualization/Thinking.*** As with reflection, time is taken away to allow the learner to analyze the key aspects of the learning identified in the reflective observation/thinking phase (Murray, 2018, p. 2; Stock & Kolb, 2021, p. 4). The actions taken or decisions made during the learning are analyzed through the comparison to previous ideas and

concepts, and new conclusions/learnings are formed that can be taken away for future implementation (Stock & Kolb, 2021, p. 5).

***Active Experimentation/Acting.*** The final stage which will give rise to a new concrete experience takes the conclusions made in the previous stage and transforms them into action (Murray, 2018, p. 2; Stock & Kolb, 2021, p. 5). These new conclusions, the next step in learning, provides the opportunity for a new experience to occur, testing that new knowledge and starting the experiential learning process anew (Murray, 2018, p. 2; Stock & Kolb, 2021, p. 5).

### *Summary of Philosophical Basis*

As identified by review of the influential voices in my philosophy, when done properly, experiential learning is theorized to better engage the whole learner and enhance the learning by providing learner-specific meaning (Kolb & Kolb, 2017, p. 11; Murray, 2018, p. 1). While important to my argument, it is necessary to note that not all experiential learning opportunities result in effective and appropriate education. John Dewey was more than aware of this as he acknowledged that not all experiential learning opportunities provide valid experiences, the resulting lesson may in fact serve to mis-educate the learner, or the learner may simply not grow from their experiences (Murray, 2018, p. 1). The fickle nature of experiential learning serves as a facet of my current argument for the incorporation of HFS into healthcare, specifically respiratory therapy, curriculum.

## Real-time Clinical Learning

True clinical learning opportunities occur in the unpredictable, fast-paced, and uncontrolled realm of the healthcare environment. Clinical practicums are intended to offer students the chance to transform didactic knowledge into professional practice under the tutelage of seasoned healthcare professionals within their chosen fields, inevitably relying on the skill and

teaching ability of the professional to provide quality learning (Nagarajan & McAllister, 2015, p. 279; Rodger et al., 2008, p. 57). This reliance upon the 'luck of the draw' for learning opportunities can prove detrimental to student development, connection of theory to practice, and patient safety (Salifu et al., 2022, p. 546). The recent Covid-19 pandemic highlights another concern regarding the feasibility of clinical experiences as staff are less available to effectively train students in the face of increasing patient acuity and workload, forcing the choice between patient care and student preceptorship to be made (Dreifuerst et al., 2021, p. 239; Rodger et al., 2008, p. 56; Salifu et al., 2022, p. 546).

### *Connection to Kolb's Experiential Learning Theory*

When the stars align, and students are afforded the opportunity to fully engage in patient-care instances, the experiences afforded satisfy the concrete experiences necessary for ELT to begin (Murray, 2018, p. 5; Stock & Kolb, 2021, pp. 4-5). Students are able to apply their own experiences and knowledge base in the provision of therapy to their patients under the supervision of the preceptor. Should the time be available and the preceptor familiar with the need to follow through with the remaining steps of ELT, a debrief of the experience enables the student to reflect upon their actions, analyze the decisions made and take the new learning forward to the next opportunity (Murray, 2018, p. 2; Stock & Kolb, 2021, p. 4).

### *Disconnection to Kolb's Experiential Learning Theory*

Real-time clinical experiences provide many valuable learning opportunities for allied healthcare students and cannot be completely taken off the table, however issues do occur. Due to the inability to predict what opportunities may arise in a standard clinical practicum, the appropriateness and adequacy of experiences is limited for clinical learners (Wall, 2017, p. 13). As the development of skill sets is unpredictable due to the inconsistency of these opportunities,

made possible by varying patient presentation and instructor facilitation, student participation in a concrete experience may not satisfy the first stage of ELT, thus stopping the cycle in its tracks (Nagarajan & McAllister, 2015, p. 285; Salifu et al., 2022, p. 546). Limited involvement, opportunity to reflect and analyze, and perhaps lack of opportunity to employ new knowledge all may contribute to clinical experiences not satisfying the needs of the ELT.

### *Impact on Occupational Competency*

Concerns with the current clinical practicums focusing primarily on the real-time clinical experiences arise when inconsistencies in opportunity and facilitation result in the formation of unsafe habits that go unacknowledged due to the uncontrolled nature of the clinical environment and lack of consistent supervision by educators (Nagarajan & McAllister, 2015, p. 285). The distance between acquisition of didactic knowledge and practical implementation serves to diminish the development of both areas (Kolb & Kolb, 2017, p. 14). These inconsistencies and poor learning experiences are detrimental to the development and understanding of occupation specific interventions, job satisfaction and overall professional self-image (Nagarajan & McAllister, 2015, p. 286). Positive learning environments, necessary to properly engage and nurture a learner, are suffering as a result of increased workload and preceptor fatigue. Time constraints, learner preparedness, and location can all hinder the efficacy of ELT and the development of competent patient care (Kolb & Kolb, 2017, p. 31; Rodger et al., 2008, p. 55). The erratic nature of real-time clinical learning that fails to satisfy the stages of effective experiential learning serve to provide greater justification for the increased incorporation of high-fidelity simulations (HFS) in pre-clinical learning for healthcare programs. Reliably consistent with completion of learning objectives, HFS are an obvious choice.

## High-Fidelity Simulations (HFS)

Offered as a potential substitution for real-time clinical learning opportunities, HFS are structured scenarios experienced in controlled, reproducible, and psychologically safe environments for learners to engage in profession specific interventions while ensuring patient safety (Davis et al., 2022, p. 676; West & Parchoma, 2017, p. 13). Within the framework of HFS the inclusion of a pre-brief to present the learning objectives, establish a psychologically safe environment, and engage the learner begins the process (Salifu et al., 2022, p. 558). Following the pre-brief, a simulated situation occurs, constructed by a trained educator or facilitator, with specific developmental goals in mind that involve the learners via direct participation or as observers. The final stage of the HFS is perhaps the longest, during which a debrief of the experience, from what went well to what could improve, allows students and educators to reflect upon actions thus promoting self-awareness, reflective learning, and correction (Salifu et al., 2022, p. 558).

### *Connection to Kolb's Experiential Learning Theory*

An obvious standout of HFS in satisfying Kolb's ELT is the last phase, the debrief in which all participants, active or passive, engage in reflective observation, abstract conceptualization, and active experimentation (Davitadze et al., 2022, p. 2; Dreifuerst et al., 2021, p. 240; Eppich & Cheng, 2015, p. 1; Murray, 2018, pp. 2, 5; Stock & Kolb, 2021, pp. 4-5). All learners, regardless of role played in the HFS, create their own concrete experiences from which they reflect upon. Reflection upon the actions of others is also possible, furthering the insight gained once abstract conceptualization begins within the group dialogue. The structured dialogue following frameworks such as the 'Promoting Excellence and Reflective Learning in Simulation [PEARLS] structure (Davis et al., 2022, p. 678; Eppich & Cheng, 2015, p. 1), engages the learner to provide and receive immediate feedback regarding performance, both

positive and negative, that can be used to create new learning (David et al., 2022, p. 676). Repeated simulations, or transfer to real-time clinical experiences then satisfies the last step, active experimentation in which the newly gained knowledge is transformed and implemented (Bogossian et al., 2019, p. 3760). The active discourse that learners engage in with HFS provides the deeper learning that is so greatly necessary for professions that are practice and competency based. Provision of learning opportunities such as HFS prior to entry into clinical practicum will provide superior learning for healthcare students than the simple act of 'doing' could every provide.

### *Disconnection to Kolb's experiential learning Theory*

Facilitator training and competency is one area in which HFS may not satisfy the four stages of Kolb's ELT. Lack of control over timing, the scenario, and ability to fully engage learners can minimize the positive impact of HFS (Murray, 2018, p. 5). The inability to immerse students in the fictional aspects of simulation due to the use of manikins and dolls, or resistance to participation in experiential learning may negatively impact the generation of a concrete experience (Murray, 2018, p. 5) Without the creation of contextual and emotional connections to the experience, subsequent stages of ELT will not occur and prevent effective learning (Murray, 2018, p. 5; Stock & Kolb, 2021, p. 5).

### *Impact on Occupational Competency*

As HFS are controlled and standardized learning scenarios offered in psychologically safe environments, students are provided with opportunities to fully engage without fear of repercussion, judgement, or injury to patients (Salifu et al., 2022, p. 546; Wall, 2017, p. 78). The absence of anxiety over the impact of choices allows the learners to delve deeply into the potential learning (hooks, 1994, p. 13; Murray, 2018, p. 2). The reproducible and consistent

nature of HFS, with the ability to focus on clear and specific objectives improves student competency with the provision of scenarios that may not present frequently (Salifu et al., 2022, p. 558; West & Parchoma, 2017, p. 13).

## Current Integration of HFS into Healthcare Professions

As noted previously, healthcare professional populations are shrinking from burnout as a result of increasing patient acuity, lack of resources, and retiring workforces, serving to reduce the availability of clinical learning spaces and the accompanying preceptors to facilitate clinical education (Rodger et al., 2008, pp. 53, 56). The viable integration of high-fidelity simulations (HFS) into other healthcare educational programs has been investigated and found to have promising results. Curl et al. (2016, p. 73) were curious about the impact of combining HFS and clinical learning as an alternative to the strictly traditional clinical learning approach. The literature review found studies that supported the increased integration of HFS into nursing programs, yet minimal information concerning integration into allied healthcare educational programs was found.

### *Impact on Occupational Competency*

Inquiry into the impact of HFS on occupational competencies in other healthcare professions found a research study completed by Curl et al. (2016) investigating the impact of integrating varying levels of HFS into nursing education and the impact upon clinical competencies (p. 72). The first study referenced included a quasi-experimental study evaluating the confidence and competence of students in an acute myocardial infarction scenario following the presentation of theory through lecture, or a combination of lecture and simulation (Curl et al., 2016, p. 73). Results of the study found that even with controls in place to account for previous knowledge, the group receiving the combination of lecture and simulation scored significantly

higher in the post-test Acute Myocardial Infarction Questionnaire: Cognitive Skills Test (AMIQ) (Curl et al., 2016, p. 73). A second study, one with a smaller sample size, *n=12*, compared the scores of nursing students on a critical care exam following time in either traditional clinical learning or simulation (Curl et al., 2016, p. 73). The results of this study, albeit impacted by a smaller sample size, did not show any difference in student outcomes between the two groups, suggesting that the substitution of HFS for clinical time did not negatively impact student learning (Curl et al., 2016, p. 73).

Curl et al. (2016) also highlighted two studies that investigated the bearing that integrating varying amounts of HFS for clinical time had on student outcome. The first study, completed by Watson et al. in 2012, provided supporting evidence that substituting HFS in lieu of 25 percent of clinical time did not negatively impact student learning (Curl et al., 2016, p. 73). The second study, took this investigation even further, looking at student outcomes with the integration of ten, 25 and 50 percent integration of HFS in place of traditional clinical learning. Again, the results of the study found that no significant differences in clinical competency existed for the varying levels of integration, both at the time of completion, at six weeks, three months, and six months post program completion (Curl et al., 2016, p. 73).

Using the literature to support the proposed study, The Nursing: Southeast Texas Regional Innovation Project on Effective Simulation (Nursing STRIPES), Curl et al. combined three nursing programs and replaced half of the traditional clinical time with HFS (2016, p. 73). Two control groups were established, the first, the Traditional group, participated only in the traditional methods of clinical learning while the second group, the STRIPEs group, received a combination of both traditional clinical learning and simulations (Curl et al., 2016, p. 73). To ensure equal experiential learning was offered, either through simulation or traditional clinical

time, four hours of simulation was considered equivalent to eight hours of clinical time. Simulations were structured to ensure all students were prepared with the appropriate theory, all students were active participants, and debriefing was integrated to allow for clinical reasoning and reflection upon the learning (Curl et al., 2016, p. 74). The two groups were evaluated on the same criteria of clinical or simulation performance and tested via the National Council Licensing Exam for Registered Nurses (NCLEX-RN) (Curl et al., 2016, p. 74). The results found that amongst various assessment parameters, significant differences existed between the two groups. The STRIPEs group of students had significantly higher exam and performance scores over the Traditional group of students (Curl et al., 2016, p. 75). One important addition to the outcome of the STRIPEs study was the improved confidence in technical and critical thinking abilities in the simulation-based group (Curl et al., 2016, p. 76).

### *Impact on Learner Satisfaction*

The impact of HFS on the development of occupational competency is one benefit that is evident when considering the integration of simulations into healthcare programs. The added bonus is the positive psychological impact on healthcare students. Bogossian et al. (2019) sought out the 'gold standard' evidence to support the greater incorporation of simulations in lieu of traditional clinical learning. The results of their investigation, and that of Davitadze et al. (2022, pp. 6-8), both provided data that substantiates the additional positive benefits of HFS into pre-clinical curriculum. Self-confidence, self-evaluation of comprehension and satisfaction were all shown to be significantly improved when simulated patient care was integrated into the program curriculum for varying cohorts of healthcare students (Bogossian et al., 2019, p. 3769; Davitadze et al., 2022, pp. 6-8).

### *Summary of HFS Integration*

Though the research is limited, the integration of HFS into other healthcare programs is proving to have improved, or at least equivalent, outcomes to those traditionally produced by real-time clinical experiences. Aside from the obvious improvement on examination outcomes that is often the focus of research, the added bonus of improved student satisfaction, confidence and competency should be another area of interest. Finally, with a decreasing workforce in healthcare professions across Canada, the success of integrating HFS into healthcare programs, as demonstrated by the STRIPEs study, may prove to be a feasible and appropriate solution to the demand for increased healthcare graduates and the limitations on clinical placements (Davis et al., 2022, p. 676).

**HFS in current Canadian Respiratory Therapy Programs**

Investigation into the level of incorporation of HFS into Canadian Respiratory Therapy programs revealed 23 colleges or universities that offer the speciality education. All programs offer varying certifications from diplomas to degrees of respiratory therapy, dependent upon the educational path chosen by the student applicant. The list, retrieved on October 18, 2022, from the Canadian Society of Respiratory Therapists [CSRT] (2020) professional website, reveals the existence of programs across the nation, present in eight provinces. Further research into the program curriculum of these 23 programs reveals a trend in the course content serving to provide respiratory therapy students with the foundational theoretical knowledge necessary to successfully complete a clinical practicum. The clinical practicums are offered at varying times throughout the individual programs and offer the students an opportunity to apply their theoretical knowledge in the real world of clinical life. The research revealed the absence of specifically designed and dedicated courses integrating HFS into the course work. Cursory review of program and course information on institutional websites for the Northern Albertan

Institute of Technology [NAIT] (n.d.), the Southern Albertan Institute of Technology [SAIT] (n.d.), Thompson Rivers University [TRU](n.d.), the University of Manitoba (2022), the New Brunswick Community College [NBCC] (2022), and Dalhousie University (n.d.) provide little information on course specific content though suggest the integration of simulations occurs for assessment purposes only. Program length limitations, combined with the heavy course load already evident in program content across Canada suggests the prevalence of HFS integrated in respiratory therapy programs is absent or minimal at best.

### *Pre-Clinical Respiratory Therapy Program at Thompson Rivers University (TRU)*

The current structure of the pre-clinical Respiratory Therapy program at TRU is familiar to me due to my affiliation as an Assistant Teaching Professor within the same program. From first-hand experience now teaching in the program and previously teaching the clinical component, I am able to evaluate the level of HFS integration in the current program structure. Though greatly desired by many faculty and students, the current integration for respiratory therapy specific simulations is limited to two sessions per semester in the pre-clinical year, regardless of enrolment in the diploma (three years), degree (four years), or fast-track (two years) streams. A total of four simulations are offered to students and serve to be extremely successful. Informal student feedback and skills assessment support that the incorporation of HFS is beneficial not only to student perception of their abilities, but also to confidence and competence levels (personal communication, 2020-2022). The ask for greater incorporation is a regular fixture on program feedback, year after year.

### *Clinical Practicum at Thompson Rivers University (TRU)*

Working over the past two years with students entering the world of clincal life, the informal feedback from students is the desire for greater HFS incorporation into pre-clinical

program curriculum to better prepare for the realities of clinical practice. Greater incorporation, to provide students the opportunity to better integrate the individual skills sets, envision what working with ill patients includes, and how to effectively communicate in a multi-disciplinary team is all highlighted by verbal feedback received over the two years. This improved preparation, as reported to me by past clinical students, would give them a 'leg up' and provide them with the confidence and competency to make better use of their clinical time and experiences. These sentiments are supported by evidence presented by Salifu et al. (2022, p. 546) that exposure to clinical learning in simulations prior to entrance into a clinical practicum may help the development of occupational competence and confidence.

### *Summary of HFS Possibilities in Canadian Respiratory Therapy Programs*

With the changing face of Canadian healthcare, diminishing workforces, aging population, burnout and more, the call for increasing graduate numbers from healthcare programs is felt across the nation. Respiratory Therapists, the cardiopulmonary specialists highlighted by the recent and ongoing pandemic, are one of the professions most in demand. In order to meet the need of Canadian healthcare, and ensure that graduates are proficient, competent, safe, and confident in their practices, re-evaluation of current program structure is necessary. Consideration of effective learning theories, such as ELT, and the techniques required to effectively execute them, such as HFS, must occur and subsequently be incorporated into program curricula.

Recognition of the positive impact has been informal to this point, with minimal data available (David et al., 2022, p. 676) but must be the first step in changing the current paradigm of Respiratory Therapy education. Investigation into the increased incorporation of HFS in pre-clinical education, the logistics and execution, must be a focus in the near future of curriculum

developers. Barriers to implementing greater HFS, such as funding, space, time, and facilitators must be acknowledged and judiciously resolved to ensure the success of this claim (Ferguson et al., 2020, p. 916). For patient safety and occupational satisfaction, increased competence, and confidence, I believe I have begun to make the case for improved incorporation of high-fidelity simulations into educational programs across the country.

## Chapter Three: Application

The integration of high-fidelity simulations (HFS) into healthcare education curriculum to improve graduate satisfaction is at the heart of my argument in this submission. The improved competence, confidence, and proficiency of healthcare students, specifically respiratory therapy students, is the primary focus of my claim. As a past graduate of the Respiratory Therapy (RT) program at Thompson Rivers University (TRU), a current Master of Education (M.Ed.) student, and a new tenure-track addition to the very same faculty that shaped me into the educator I am today, I find myself deeply invested in the current and future state of the profession.

### Reflecting on Experiences

The motivation that has spurred my post-graduate work comes from time spent looking back on educational and professional experiences, examining what has worked for me and what has not. These reflections highlight that the road I travelled was not a straightforward and easy one in the process of learning and reminds me that the students I am working alongside may experience similar struggles. The process of learning is not simply the result of intellectual ability but requires the consideration of emotional and psychological components as well (Hildebrand, 2018, Section 5.1; hooks, 1994, p. 13).

#### *Personal Experience as a Learner*

As a learner, I often found that I struggled with the conceptualization of theory if the information was presented only in lecture format. As an undergraduate student in my first bachelor's degree, I frequently struggled trying to comprehend and implement the theory I was learning in class. Just as Paulo Freire theorized, the 'banking' method of education was not appropriate for my learning style (Gadotti & Torres, 2009, p. 1259; hooks, 1994, p. 14). Laboratory sessions associated with the courses did provide an environment in which I was able to engage with theory through personal experiences (Hildebrand, 2018, Section 5.1), which later proved to be my preferred learning style, though something was missing. Unbeknownst to me, what was missing would end up being posited in Kolb's four stages of ELT (Murray, 2018, p. 2; Stock & Kolb, 2021, p. 4; Wall, 2017, p. 75).

It was not until the time of entering the Respiratory Therapy program at TRU, in which practical application became the norm, that my comprehension and recollection of theory finally cemented itself. My experience throughout the two didactic years was leaps above my previous undergraduate experience, and I believed that entering into the clinical practicum, with the real-time application of the theory, would further my competency. Unfortunately, my experience of clinical learning was not as successful as I had hoped. The lack of a controlled and safe atmosphere to practice proved to make my learning suboptimal to what it should have been. Recollection of the clinical occurrences emphasized that I remembered more of the emotions, the context, and the negatives of the experience, rather than the positive learning opportunities that should have presented themselves. This was the one thing that made me dread going to each and every clinical shift over the 47-weeks of our clinical practicum.

***Personal Experience as an Educator to Clinical Learners***

From the time I graduated from TRU as a Registered Respiratory Therapist (RRT) to the point that I secured my first full-time educator position was a period of six years in which I had no contact with clinical practicum students until June of 2020. I was eager to work alongside the fresh faces who were excited to finally be engaged with real patients, applying all the information learned over the previous years and ready to get the final year of their schooling completed. The first moment interacting at the bedside with a few students, going through the process of assessing a patient, came the brutal reminder that they had almost no concept of what applying their knowledge looked like. At once I recognized the fear and uncertainty that I had felt so many years prior and it identified a large gap between theoretical knowledge and application. In order to resolve this, precious time had to be spent bringing the students up to baseline so that they could make the most of their clinical learning before moving to another site halfway through the clinical year.

As similar gaps were identified in many of the students, to optimize the time of both the student and instructor, I began incorporating simulations into dedicated class time to develop their abilities. Regardless of the objective(s) for the simulations, the opportunity was presented to allow the students to work in psychologically safe spaces, away from the judgemental eyes of preceptors, practice the incorporation of many concepts, and learn from one another during the post simulation debrief (Salifu et al., 2022, p. 558). Unbeknownst to me, I was providing the students with the chance to fully engage in Kolb's ELT, working through the concrete experience, reflective observation, abstract conceptualization, and active experimentation (Murray, 2018, pp. 2, 5; Stock & Kolb, 2021, pp. 4-5). The satisfaction, delight, and improved comprehension that came from these experiences highlighted the importance of increasing HFS integration into the RT curriculum, but the question was at which point in the program?

Over the next two years in the clinical site coordinator/instructor (CSC) role working with clinical students, seeing the gaps between theory and application, I came to realize that the most effective time to incorporate more HFS was not during the clinical practicum, but rather beforehand. Better preparation of the students in their pre-clinical year through consistent and controlled HFS would enable students to fully emmesh themselves with the learning in an environment free of criticism, repercussion, and enabling shared learning (hooks, 1994, p. 13; Murray, 2018, p. 2). The improved preparedness of students for the clinical practicum would then serve to optimize learning when opportunities were presented, relieving some of the burden on preceptors and CSCs carrying the responsibility of starting from scratch, improve patient safety, and graduate more competent, proficient, and confident respiratory therapists (Salifu et al., 2022, p. 546; Wall, 2017, p. 78).

**Integration of HFS into Respiratory Therapy Pre-Clinical Curriculum**

As highlighted in Chapter 2 – Literature Review, HFS are experiencing a golden age in which their value is being recognized and incorporation into healthcare programs is increasing. The obvious benefits of increased test scores, student satisfaction and graduate competency have been appreciated through studies completed by Bogossian et al. (2019, pp. 3759-3775), Curl et al. (2016, pp. 72-77), and Davitadze et al. (2022, pp. 1-11) in nursing and allied healthcare programs. Within respiratory therapy, limited evidence is available investigating the benefits of HFS integration into program curriculum, though one study does explore its impact. David Wall (2017, pp. 75-80), investigated the advantages HFS provide respiratory therapy students, in which preferences for learning in a simulation lab, engaging in active experimentation and low levels of stressful emotions were highlighted. As a competency-based program, respiratory therapy programs across Canada have varying levels of clinical application integrated into to

ensure their graduates achieve standard performance and comprehension in order to be certified though the Canadian Board for Respiratory Care (CBRC, 2020) and practice as a Registered Respiratory Therapist (RRT). A cursory program review of the 23 Canadian Respiratory Therapy programs listed on the CSRT (2020) website draws attention to the absence of simulation dedication in program curriculum.

### *Proposal for Increasing HFS in Pre-Clinical Education at TRU*

The high standards that the Thompson Rivers University (TRU) Respiratory Therapy (RT) program has consistently achieved over the years has provided support for maintaining the current operating structure, until now. Drawing from the literature presented in Chapter 2 supporting the increased incorporation of HFS into other healthcare programs, the argument for increasing high fidelity simulations in the pre-clinical year of the RT program is buoyed by the changing face of Canadian healthcare and its limited training abilities. As the program currently offers entry streams that have students reach their final clincal practicum in as little as one year, the fast-track stream, or up to three years, a dual credential with either a Bachelor of Health Science or Master of Education, the incorporation of a dedicated simulation course would best occur in the final on-campus year prior to the commencement of the clinical practicum (TRU, n.d.). Incorporating a dedicated simulation-based course during the final two semesters prior to the clinical practicum would solidify foundational knowledge learned over the previous semesters. An obvious barrier to this proposal that is faced in the current program structure is the lack of time for students to attend more than two simulations per semester in the pre-clinical year. In addition to this, the current simulation space for the RT program is small, dark, and utilizes out-dated equipment.

### *Considerations for a Pre-Clinical Simulation Based Course*

The provision of a course dedicated to HFS requires the consideration of not only space, time, and resources but as the literature review highlighted, faculty that are trained and proficient in the facilitation of a controlled, consistent, engaging, and psychologically safe simulation environments (Salifu et al., 2022, p. 558). Engagement of all primary stakeholders would be required, including but not limited to representatives from the institution, to evaluate the feasibility, and representatives from the program to consider the curricular aspects and satisfaction of the National Competency Framework (NCF) as per the National Alliance of Respiratory Therapy Regulatory Bodies (2016-2021). A full SWOT analysis (Balamuralikrishna & Dugger, 1995, pp. 1-12) completed by Wetterstrand (2021), is included in Appendix A of this document outlining the strengths, weaknesses, opportunities, and threats to the implementation of a core simulation course. Taking this analysis into consideration, one obvious component of a proposed simulation-based course would be the addition of a three-credit course each semester into an already full course curriculum. Increasing the course-load would require a reconfiguration of the entire program to either keep it as a 90-credit diploma or examining the possibility of reforming the program into a 120-credit undergraduate degree.

**What am I currently doing?**

As the creation of a simulation-based course is not on the horizon at this point in time it does not mean that my instructional methods are not mirroring what I have been arguing. As Kolb's ELT (Murray, 2018, p. 2; Stock & Kolb, 2021, p. 4; Wall, 2017, p. 75) has cemented itself into my educational philosophy, along with the psychologically safe environment of simulation-based learning (Salifu et al., 2022, p. 558), I actively strive to present the theoretical information I am responsible for in a manner that actively engages the learners. My current course, RESP 2590 – Patient Assessment, has an associated lab component and is the only

course in the Fall semester that involves the students in simulation. The simulations are the only two that students are involved in during the semester. Though the labs and simulations offer instances to satisfy Kolb's concrete experience stage (Stock & Kolb, 2021, p. 4), I actively strive to engage the students with concepts during our class lectures. Discussion, sharing of my own personal experiences, practice, and integration of concepts has become a daily experience and has been welcomed and enjoyed based on student feedback. During the lab sessions, students are presented with skills that further their learning and are assessed in low fidelity simulation challenges. Before the simulation of skills, students are pre-briefed with the expectations for psychological safety and assessment (Davis et al., 2022, p. 676; Salifu et al., 2022, p. 558; West & Parchoma, 2017, p. 13), and afterwards time is dedicated to allowing the students to reflect on their performance and that of their peer group. The time for reflection and subsequent discussion satisfies Kolb's second and third stages of ELT, reflective observation and abstract conceptualization (Murray, 2018, p. 2; Stock & Kolb, 2021, p.4). The final stage, active experimentation (Murray, 2018, p. 2; Stock & Kolb, 2021, p. 5) is able to occur in follow-up simulations or challenges as they implement feedback received from myself, the simulation facilitator, or their peers.

**Summary**

The impact that lingers from my personal experience, and that of past students strengthens my resolve that a dedicated course to HFS is necessary to better prepare students for the realities of clinical learning. By exposing students to experiences that allow the application of theory and integration of skill sets, I believe that students will not only have improved emotional and contextual experiences during their clinical year, but they will also be able to better engage in the real-time learning opportunities that are made available. I believe the

benefits are not simply tied to student experience, but also to the patients, and the senior staff bearing the weight of preceptorship.

## Chapter 4: Concluding the Argument

The purpose of this submission has been to make the argument for increasing the incorporation of high-fidelity simulations (HFS) into pre-clinical healthcare curriculum, particularly in respiratory therapy education. Drawing from personal experience to seek learning opportunities, and carrying these forward for the benefit of future educators and students is deeply ingrained in the inspiration for this paper. As a student in a cohort of educators and reaching the culmination of our Master of Education, the path I have travelled has led to my personal and professional mountain top from which I wish to shout my message out to the world. The message of calling for review and revision of the methods in which healthcare education programming is offered in order to better prepare students for the realities of healthcare. The learning we provide as educators must be of the highest quality and value as is it owed to the individuals dedicating their professional lives to work on the frontlines of healthcare, sacrificing their time, physical and mental health in order to preserve the health and lives of their patients.

As a respiratory therapist and graduate student, progressing from student into the role of clinical educator and finally into program instructor, I have been afforded many opportunities to apply theory in real-time scenarios. During this time, I have also witnessed firsthand the growing distance between educational methods and clinical expectations in healthcare programming. The increased strain upon the Canadian healthcare system, a system that once upon a time was able to support the education and graduation of healthcare professionals is no longer up to the task, thus turning the responsibility back upon the institutions and programs. My proposed solution? Increasing the inclusion of HFS into pre-clinical program structure,

regardless of the healthcare specialty, though my focus rests upon respiratory therapy curriculum. And this submission has argued and supported exactly that.

## Putting it Together

### *The Starting Point*

The development of a claim or an argument requires a starting point from which it evolves. The evolution of my interest into effective learning techniques, optimization of healthcare education, and now proposed revision of respiratory therapy curricula also had to begin somewhere. That somewhere was the diverse journey through personal, professional, and educational experiences highlighting existing disparities between the expectations of clinical practicum and the preparation offered in the pre-clinical learning of respiratory therapy programs. Drawing from personal experience and linking it to educational philosophies gave rise to the call for increased experiential learning, HFS, in pre-clinical education to improve student confidence and competence in advance of entering the final clinical practicum.

### *Summary of the Literature*

Prior to providing the evidence to support the case made for HFS, a brief history of my personal educational philosophy provided the inclusion of experiential learning philosophers to corroborate my call for increasing experiential learning prior to clinical practicums. The collective of Paulo Freire, John Dewey, bell hooks, and David A. Kolb all argued for the same changes in education, to move away from traditional methods of education to more interactive, relatable, and holistic learning. Paulo Freire famously fought against the antiquated methods of 'banking' education (Gadotti & Torres, 2009, p. 1259; hooks, 1994, p. 14) that were prevalent in his native Brazil for years before bell hooks continued the proverbial fight for increasing the critical awareness of learners, growing the ways they engaged with their learning (hooks, 1994,

p. 99). John Dewey, a champion for the experience of learning (Hildebrand, 2018, Section 5.1), provided the inspiration for David A. Kolb's 'Experiential Learning Theory' (ELT) upon which a large portion of my argument stands (Kolb & Kolb, 2017, p. 10). The four stages of Kolb's ELT; concrete experience, reflective observation, abstract conceptualization, and active experimentation; provided the philosophical basis and justification for the success of HFS in healthcare curricula (Kolb & Kolb, 2017, p. 10; Murray, 2018, p. 2; Stock & Kolb, 2021, p. 4; Wall, 2017, p. 75).

Working from the theoretical basis for experiential learning, a review of the available literature on high-fidelity simulation (HFS) incorporation into healthcare curriculum revealed studies in support of my argument, though the amount focusing on the impact within respiratory therapy was limited to only a few brief articles. A comparison between real-time clinical learning opportunities, simulated learning scenarios, and satisfaction of Kolb's ELT revealed the inconsistent nature of real-life clinical learning due to erratic opportunity, preceptor fatigue, and absence of positive learning environments deemed necessary to satisfy Kolb's ELT (Dreifuerst et al., 2021, p. 239; Kolb & Kolb, 2017, p. 31; Nagarajan & McAllister, 2015, p. 285; Rodger et al., 2008, pp. 55-56; Salifu et al., 2022, p. 546). The lack of effective learning environments in real-time practical settings proved to diminish both theoretical and practical learning, professional self-image, and development of occupational skillsets (Kolb & Kolb, 2017, p. 14; Nagarajan & McAllister, 2015, p. 286).

The alternative, high-fidelity simulations (HFS), comprised of controlled scenarios, atmosphere, promised psychological safety, and integration of pre- and de-briefs facilitated by a trained instructor (Davis et al., 2022, p. 676; West & Parchoma, 2017, p. 13) allowed for all four

stages of Kolb's ELT to be satisfied (Davitadze et al., 2022, p. 2; Dreifuerst et al., 2021, p. 240; Eppich & Cheng, 2015, p. 1; Murray, 2018, pp. 2, 5; Stock & Kolb, 2021, pp. 4-5).

Investigation into the impact of current integration of HFS in healthcare curricula revealed the positive effects that controlled learning has upon the development of occupational competencies. Curl et al. (2016, pp. 72-77) provided a comprehensive review of studies in support of the overall inclusion of HFS as a method to supplement clinical learning or replace a portion of it. Learner confidence, comprehension, and competence were boosted by the integration of simulation into learning (Curl et al., 2016, p.73; Davitadze et al., 2022, pp. 6-8) while test scores and performance evaluations of clinical students receiving simulation were significantly higher than cohorts participating solely in traditional clinical learning (Curl et al., 2016, p. 75).

A cursory review of six current program curricula within the 23 Canadian programs revealed a focus upon real-time clinical experience rather than a commitment to HFS (Dalhousie University, n.d.; New Brunswick Community College, 2022; Northern Albertan Institute of Technology, n.d.; Southern Albertan Institute of Technology, n.d.; Thompson Rivers University, n.d.; University of Manitoba, 2022).

## Implications of Applying the Argument

### *Practical Implications*

In response to the argument made and supported in my submission, there are practical implications to take into consideration. As noted by a program review of the respiratory therapy program at Thompson Rivers University (n.d.), it was found that over the course of the two semesters preceding the clinical practicum, minimal time is allotted for simulation experience. Re-evaluation of program structure may open the door to the generation of a dedicated

simulation-based course that would serve as a template for other programs to follow. Should this occur, the entire scope of the program would have to be taken under review as the incorporation of a new course would mean either the removal of another, or potentially increasing the length of the entire program. Currently a three-year diploma, the possibility of increasing educational requirements may change the program to a four-year degree program. Though potentially better in preparing learners for the realities of clinical practice and thus enhancing the learning available, increasing the program length could delay the graduation of much needed healthcare professionals.

Future investigation would be required to determine the components required to develop a simulation-based course to explicitly offer HFS and the concepts considered the most beneficial to learners.

### *Theoretical Implications*

The arguments made in this submission bring to light the bigger question of improving the approach to education in all healthcare fields. Traditionally applied approaches to the training of healthcare professionals; physicians, allied health professionals, nursing; may not be as appropriate as they were in the past. Understanding the various methods in which program theory can be taught and the manner in which those students learn most effectively must be considered when program curricula is generated. The days of memorizing and recalling concepts are no longer appropriate as the complexities of theory and its application have outgrown the traditional mold of educational philosophy.

## Summary of the Argument

As argued throughout this submission, the ever-changing face of healthcare within Canada places new and different demands upon the graduates of healthcare programs. To

provide comprehensive education to students of these programs, especially students in respiratory therapy, review and revision of current program curricula is required. By increasing student exposure to clinical scenarios through the provision of HFS prior to clinical practicums (Bogossian et al., 2019, p. 3760), it is argued that students will gain increased confidence, competence, and proficiency upon graduation (Rodger et al., 2007, p. 59).

***Success of the Argument***

Supported by not only the philosophical evidence, but also the literature available, the incorporation of HFS within healthcare program curricula has proven to be a viable addition to the educational toolkit. Effectively working through the four stages of Kolb's experiential learning theory (Murray, 2018, p. 2; Stock & Kolb, 2021, p. 4; Wall, 2017, p. 75), healthcare students have been able to optimize their education by effectively working with the learned theory, rather than simply observing it. This improved retention has enhanced performance and perceptions of competency in healthcare students.

The focus upon healthcare professionals is increasing daily throughout the world as new infections appear and staff shortages grow. To retain these healthcare professionals, providers of healthcare education must recognize the best way to prepare learners for the realities of clinical practice. The current nature of clinical practicums simply submerses students in the harsh realities of healthcare without adequate preparation. This lack of preparation sees students leaving their professional education, regardless of the time or financial loss that may occur. Better preparation for clinical learning provides multiple benefits to the learners, patients and the healthcare system as professionals will remain at the bedside.

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## Appendix A: SWOT Analysis

| Strengths<br>*Things your school does well. Aspects of your service that parents and pupils particularly like. Characteristics and/or activities that are unique to your school. Advantages of working in or using your school.* | Weaknesses<br>*Areas in which the school could be working much more effectively in, or things that the school could be doing better. Things the school feels it lacks that it needs to have in order to improve.* |
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| **1. Respiratory Therapy Program – Program Curriculum**<br>- Reputation for consistently graduating top national performers.<br>- Program curriculum a successful combination of didactic and laboratory learning.<br>- Clinical internship requires graduates to be proficient in all acute care and community settings.<br>- Clinical internship meets all requirements of the National Competency Framework (NCF) for Respiratory Therapy.<br>- Community involvement integrated into program curriculum (pre-pandemic) with Pulmonary Rehabilitation and Pediatric and Adult Sleep outpatient programs to provide greater patient interaction.<br>- Program options provides opportunities to applicants to enter the workforce within as little as two years of program commencement (Fast-Track Option).<br>**2. Respiratory Therapy Faculty**<br>- Faculty consistently updating program material to the most current theory.<br>- Faculty are supportive and invested in the personal and professional success of graduates.<br>- Appreciation of the value in simulations and the attempt to | **1. Respiratory Therapy Program – Program Curriculum**<br>- Occurrence of simulation involvement limited to twice a semester per student (on average).<br>- Dependency on in-person clinics and hospital observation hours to provide pre-clinical internship experience, loss due to pandemic impacted preparation of clinical internship learners and transition from didactic to practical application.<br>- Fast-Track students, shortened to one didactic year are limited in clincal experiences before the commencement of the eleven-month clinical internship.<br>**2. Respiratory Therapy Faculty**<br>- Not all instructors are trained to properly facilitate simulations to ensure learning is optimal. (Is not simply knowing the theory, it is also understanding how to facilitate a safe and supportive learning environment.)<br>**3. Thompson Rivers University**<br>- Focus upon nursing program as the main benefactor of the Chappell Family Building and the addition of modern simulations labs; representatives noted as stating the space is used by RT program (this has not happened). |

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<td>integrate into the program as frequently as possible.<br>- Faculty well-rounded in all areas of Respiratory education: knowledge base, teaching ability, etc.<br>3. Thompson Rivers University<br>- Recognizes the success and value of the Respiratory Therapy Program as a foundational draw to its institution.</td>
<td>- Lack of facilitation for other healthcare professions to access the new simulation space.<br>- Limited coordination between Nursing and Respiratory faculties for independent and combined use of simulation space.</td>
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<td><u>Opportunities</u><br>Times, conditions, situations, resources, positions, external factors, people, etc. the school can use and take advantage of to improve it services.</td>
<td><u>Threats</u><br>External factors which could have a limiting effect on the school and its quality of services now or in the future.</td>
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<td>1. Respiratory Therapy – Program Curriculum<br>- Pandemic safety plans greatly limited practical learning opportunities, requiring substitutions to be found.<br>- Increased demand for proficient graduates stresses the need to maximize clinical time to optimize learning to guarantee patient safety.<br>- Research highlights the positive impact of simulations on the learning of healthcare professionals and students.<br>2. Respiratory Therapy – Degree Proposal<br>- Proposal for creation of a Respiratory Therapy Bachelor’s degree has gained momentum in recent years.<br>- Proposal must outline additional courses that serve to enhance the skillset of graduates.<br>- Integration of a simulation-based course (3-credits) would provide scheduled clinical experience in correlation with didactic learning.<br>3. Respiratory Therapy Faculty</td>
<td>1. Respiratory Therapy Program at TRU<br>- British Columbia Institute of Technology (BCIT) has expressed a desire to initiate a Respiratory Program in the lower mainland.<br>- A great number of students originate from the lower mainland and would result in a loss of applicants to TRU.<br>2. Thompson Rivers University<br>- Competition from other programs for simulation center access.<br>- Inability to generate a schedule that accommodates the various entrance options for Respiratory Therapy in coordination with other programs.<br>- Increased used of facilities increases demand upon security, maintenance, janitorial/cleaning.<br>3. Budgetary Requirements and Faculty<br>- Increased curriculum requirements requires increased program time, faculty, equipment, and space.<br>- Approvals required from the Ministry of Health, Ministry of Advanced Education and TRU.<br>4. Respiratory Therapy Students</td>
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| - New faculty members experienced in applicability of simulations for healthcare professions.<br>**4. Thompson Rivers University**<br>- The Chappell Family Building: state-of-the-art simulation center being underutilized by one healthcare program.<br>- Increase access to on-campus resources and facilities.<br>**5. Healthcare Resources**<br>- In British Columbia, projections over the next five years posit a shortage of 400 RRTs throughout the province alone.<br>- TRU Respiratory proposing a permanent increase to 100 students per intake. Requires approval from TRU, Ministry of Advanced Education and Ministry of Health for additional funding and space.<br>- Increased simulation time would provide stronger learning reinforcement and decrease strain on clinical internship hospital sites and staff. | - Addition of a simulation course may not be looked upon as favorable by all students.<br>- Increased learning time delays time to graduation and employment.<br>- Increased course requirements increase workload and financial burden. |