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Introduction

The objective of this document is to present the basis of the **"Clinical simulation practice-based learning in nursing" (CLINICALSIM)** project aimed at Angolan higher education institutions with the objective of enriching the practical training of Angolan nursing professionals and, thus, the health of the Angolan population. To this end, it is proposed to intervene in the training of future nurses, especially in the training of the practical competencies of the profession.

The training of nursing professionals plays a fundamental role in promoting and maintaining the health of a population. In the context of Angola, a country facing various health challenges, it is imperative to address the practical training needs of future nurses to ensure the quality and effectiveness of health services offered to the population.

This project focuses on improving the practical training of nursing professionals in higher education institutions in Angola. Recognizing the critical importance of solid practical training for the development of professional nursing competencies, this project aims to intervene in the education of future nurses, with a particular focus on strengthening their practical skills.

The initiative seeks to enrich current practical training by providing resources, training, and support necessary to improve the quality and relevance of the practical experience of nursing students. By strengthening practical training, the aim is to improve the competence and confidence of future nursing professionals, which in turn will have a positive impact on the health and well-being of the Angolan population and the delivery of health services in the country.

This project includes the development and validation of an international approach based on clinical simulation for the improvement of nursing practice. Recognizing the effectiveness and potential of clinical simulation as a teaching tool, we seek to implement an innovative approach that allows students to acquire and practice clinical skills in a safe and controlled environment.

1. Contextualization of the CLINICALSIM project

Angola faces major health challenges that require highly qualified health professionals. Angola continues to have a high maternal, infant, and child mortality rate, a high incidence of infectious and parasitic diseases, respiratory and diarrheal diseases, a high level of malnutrition in children under 5, persistent outbreaks of cholera, rabies, and measles, and an exponential increase in chronic non-communicable diseases (NCDs). Communicable diseases are still responsible for more than 50% of deaths registered in the general population (República de Angola-Ministério da Saúde, 2015).

Among the health needs and current problems faced by the Angola Health Service, we highlight:

- insufficient sanitary coverage and poor maintenance
- scarce human and technical health resources
- poor distribution of health care personnel in rural and peri-urban areas
- insufficient financial resources and inadequacy of the financing model
- poor access to drinking water, sanitation, and energy (República de Angola-Ministério da Saúde, 2015).

In this scenario, nursing professionals play an essential role in the formulation of public health approaches due to their scientific and human training, as well as their adequate capacity to detect and intervene in the health needs of individuals, families, and communities, both in situations of illness and well-being.

The shortage of trained personnel makes it difficult for the health system to respond effectively to these health needs and challenges, so the training of health professionals in Angola, especially nurses, should be one of the country's priorities.

In addition, practical training in nursing in Educational Institutions (HEI) is lacking. Practical training is complex, difficult to organize, available workplaces are scarce, may pose a health risk to patients, among other issues.

In this sense, **CLINICALSIM is a capacity building project aimed at higher education institutions (HEIs) in Angola that proposes the development and validation of an international approach based on clinical simulation for the improvement of nursing practice, introducing** simulation suites and digital multimedia training tools based on the treatment of real clinical cases and scenarios, allowing students to face the challenges of the real clinical environment.

The integration of clinical simulation as a teaching strategy facilitates the acquisition and evaluation of practical competencies necessary for the professionalization of future nurses. In addition, the following purposes of this educational method are highlighted:

- It offers the opportunity to carry out on-demand and personalized internships.
- The patient's health and integrity are not put at risk.
- It promotes training and decreases the probability of error.
- Establishment of a teamwork environment
- Encourages personal and group reflection.
- Promotes communication.

2. Simulation as a learning strategy

Over the past two decades, teaching and learning techniques in the health sciences have undergone significant changes to adapt to the particular needs of health professionals. It is no longer just a matter of mastering knowledge or technical skills, but of ensuring that these actions are performed safely for patients or users. Within adult health education, it has been suggested that certain strategies are more effective, especially the use of problem-based learning (PBL) and clinical simulation, as they facilitate knowledge creation and acquisition (Ayala, Romero, Alvarado, Cuvi, 2019).

Simulation has undergone rapid development and has become a fundamental element of Health Sciences curricula. In fact, in many programs worldwide, it is considered essential for accreditation of health-related careers. In developed countries, clinical simulation was established as a standard practice at the end of the 1990s, although considering the time investment involved, its incorporation was relegated. Currently, the support of research and scientific institutions has allowed clinical simulation to become a reality in these contexts (Ayala, Romero, Alvarado, Cuvi, 2019).

This is a teaching tool used in the teaching-learning process in the health field, which involves working in controlled environments designed to replicate real situations that students may face in their clinical practice. Before its implementation, it is necessary to define specific scenarios that fit the student's competencies and educational level. In general terms, this tool assesses a variety of skills, including clinical competencies, knowledge, interpersonal attributes, clinical judgment, and technical skills. In contrast, its application at the local level may face challenges such as high costs, implementation time, and the need to standardize resources, both material (cases, instructors, evaluators) and physical (scenarios). To be effective, this strategy must follow a series of principles, and the role of the teacher is fundamental in its successful execution (Ayala, Romero, Alvarado, Cuvi, 2019).

The advantages of simulation are:

- It allows the necessary repetitions to correct mistakes and perfect skills through deliberate practice, shortening the learning curve.
- It provides a safe learning environment where error is allowed, enabling students to understand and manage the consequences of common and less usual events, which may be dangerous or difficult to recognize in real situations.
- By not exposing real patients, it reduces the cost of errors and decreases malpractice, promotes patient safety by providing pre-training to students.
- Improves student satisfaction and confidence by familiarizing them with the material and instruments and with the execution of procedures before performing them on real patients.
- It covers the teaching of non-technical skills such as teamwork, leadership, communication, stress management, and decision-making.
- It facilitates the inter-professional integration of various health professionals, promoting collaborative practice and complying with quality standards.
- It allows the objective and standardized evaluation of student performance in competencies (Sánchez Mendiola, Martínez Hernández, and Torres Carrasco, 2023).

Standardized simulation design establishes a framework for creating effective simulation experiences. This approach combines best practices from adult learning, education, pedagogical design, and clinical standards of care, along with progress assessment and simulation pedagogy. By being intentional, simulation design ensures that structures, processes, and outcomes are consistent with programmatic

objectives or institutional mission, strengthening its value in diverse contexts (International Nursing Association of Clinical Simulation and Learning, 2023).

Each simulation experience requires deliberate and systematic planning that allows flexibility and is cyclical. To achieve the desired results, it is crucial to consider criteria that facilitate their effectiveness in design and development. Following this standard supports the creation of relevant and robustly educational simulation experiences (INACSL, 2023).

3. Health Simulation

Simulation in the health field allows placing students in environments that reproduce some aspect of the reality of professional practice and create situations or problems similar to those they will face in practice with healthy or sick people (Dávila-Cervantes, 2014).

Over time, the use of simulation-based technology for the education of students in the healthcare field has proven to be highly effective in the acquisition of theoretical-practical skills (Ayala, Romero, Alvarado, Cuvi, 2019).

3.1. Health Simulation Standards

The International Nursing Association for Clinical Simulation and Learning (INACSL) released in August 2023 an update to its *Healthcare Simulation Standards of Best Practice* for health professionals. These are a guide for designing, conducting, and evaluating simulation-based experiences (INACSL, 2023).

The Healthcare Simulation Standards integrate the Code of Ethics for the Healthcare Simulationist (Park, Murphy, the Code of Ethics Working Group, 2018) and uses the terminology defined in the Dictionary of Simulation in Healthcare, both published by the Society for Simulation in Healthcare (Lioce et al., 2020).

The Healthcare Simulation Standards consist of the following individual standards

Professional development

"Initial and continuing professional development supports the simulationist throughout their career. As the practice of simulation-based education grows, professional development enables the simulationist to stay updated with new knowledge, provide high-quality simulation experiences, and meet the educational needs of students" (INACSL, 2023)

Prebriefing: Preparation and Briefing

Prebriefing is a process that involves preparation and briefing. Prebriefing ensures that simulation students are prepared on the educational content and aware of the ground rules for the simulation-based experience." "Prebriefing refers to both preparation and briefing activities. For the purpose of this prebriefing standard, prebriefing shall refer to activities PRIOR to the start of the simulation including the preparation and briefing aspects of the simulation-based experience. Guidelines will be provided to apply this standard in both preparation and briefing, so each of these components will have its own guidelines to ensure compliance" (INACSL, 2023)

Simulation Design

"Simulation-based experiences are designed with the purpose of meeting identified objectives and optimizing the achievement of expected outcomes" (INACSL, 2023)

Facilitation

"Facilitation methods are varied, and the use of a specific method is dependent on the student's learning needs and expected outcomes. Facilitation provides the structure and process to guide participants to work cohesively, understand the learning objectives, and develop a plan to achieve the desired outcomes. The facilitator is the educator who assumes responsibility and oversight for the overall management of the simulation-based experience." (INACSL, 2023)

The Debriefing Process

"All simulation-based education (SBE) activities should include a planned debriefing process. The debriefing process may include any of the activities of feedback, debriefing, and/or guided reflection. This facilitated process is carried out using multiple techniques and should be based on theoretical frameworks and/or evidence-based concepts. The debriefing process should be adapted to all simulation-based modalities. In this standard, the term "process" refers to feedback, debriefing, and/or guided reflection, except where noted.

The process aims to identify and resolve gaps in knowledge, skills, attitudes, and communication related to the individual, team, and/or system. The goal of the debriefing process is to aid in the development of understanding, improve future performance, and promote the transfer and integration of learning into practice. Although the session planned to apply the debriefing process should not be an opportunity to teach an additional class, much learning occurs during this time." (INACSL, 2023)

Operations

"All simulation-based educational programs require systems and infrastructure to assist and maintain operations." (INACSL, 2023)

Results and Objectives

"All simulation-based experiences (SBEs) originate with the development of measurable objectives designed to achieve expected behaviors and outcomes. An SBE is defined as: "a series of structured activities that represent actual or potential situations in education and practice. These activities allow students to develop or improve their knowledge, skills, and attitudes; or analyze and respond to real situations in a simulated environment." Current literature demonstrates the use of simulation in educational settings to facilitate the acquisition of cognitive, psychomotor, and affective skills." (INACSL, 2023)

Professional Integrity

"Professional integrity is demonstrated and maintained by all involved in simulation-based experiences." (INACSL, 2023)

IPE Enhanced by Simulation

"Simulation-enhanced interprofessional education (Sim-IPE) allows students from different professions to engage in a simulation-based experience to achieve shared or linked goals and outcomes." (INACSL, 2023)

Learning and Performance Evaluation

"Simulation-based experiences may include student assessment." (INACSL, 2023)

Simulation Glossary

"Consistent terminology provides guidance and clear communication, reflecting shared values in simulation experiences, research, and publications. The goal of advancing simulation science depends on the continued use of this inclusive terminology." (INACSL, 2023)

3.2. Types of Clinical simulations

Considering the equipment required, there are several types of simulators. These have been defined by *The Society for Simulation in Healthcare* (Lioce et al., 2020) as follows:

- **High-fidelity simulator:** "term often used to refer to the wide range of full-body mannequins that have the ability to mimic, at a very high level, the functions of the human body. Also known as a high-complexity simulator. Other types of simulators can also be considered high-fidelity, and that fidelity (realism) has other characteristics beyond a particular type of simulator" (Lioce et al., 2020).

  High-fidelity simulators are controlled by computer software that accurately mimic a patient's physiological responses and anatomy. Due to their high adaptability, they are usually the most favorable option in simulation; however, their main drawback is that they are one of the most expensive modalities (Red de Simulación en Salud, 2023).

- **Low-fidelity simulation:** "does not need to be externally controlled or programmed in order for the student to participate. Examples include case studies, role playing, or skills trainers used to help students or practitioners learn a clinical situation or practice" (Lioce et al., 2020).

  Low-fidelity simulators range from two-dimensional displays to static models and partial task simulators. These resources are useful for nursing students as it allows them to advance at their own pace and focus on specific skills, such as CPR or venipuncture (Red de Simulación en Salud, 2023).

- **Skills trainers or task trainers:** "A device designed to train only the key elements of the procedure or skill being learned, such as lumbar puncture, chest tube insertion, central catheter insertion, or part of a total system, e.g., ECG simulator.

  A model representing a part or region of the human body, such as an arm or abdomen. Such devices can use mechanical or electronic interfaces to teach and provide feedback on manual skills such as intravenous line, ultrasound, suturing, etc., generally used to support procedural skills training. However, they can be used in conjunction with other learning technologies to create integrated clinical situations" (Lioce et al., 2020).

Skill simulators or task trainers are devices that represent a specific part of the human body, such as an arm or a head. These make it easier for nursing students to practice a skill repeatedly without causing wear and tear or needing expensive equipment (Red de Simulación en Salud, 2023).

● **Simulated/standardized patients:** "a person who has been carefully trained to simulate a real patient so accurately that the simulation cannot be detected by an expert clinician. In performing the simulation, the simulated patient presents the gestalt of the patient being simulated, not only the history but also the body language, physical conditions, and emotional and personality characteristics. This term is often synonymous with Standardized Patient" (Lioce et al., 2020).

The simulated patients are volunteers. These practices allow the development of communication skills, taking medical histories, providing health education, requesting informed consent, explaining medical procedures, and reporting adverse news (Red de Simulación en Salud, 2023).

● **Telesimulation**: "a telesimulation platform uses communications technology to provide mannequin-based simulation training between students and instructors located at a distance from each other." (Lioce et al., 2020).

It consists of the use of telecommunications and simulation resources to provide education, training, and/or assessment to students at an off-site location. Simulationists can monitor and evaluate the learner remotely (Yasser, Tan, Harder, Balakrishnan, Chua, Liaw, 2023).

● **Virtual reality**: "the use of computer technology to create an interactive three-dimensional world in which objects have a sense of spatial presence; virtual environment/environment and virtual world are synonymous with virtual reality.

A computer-generated, three-dimensional environment that provides an immersive effect." (Lioce et al., 2020).

Virtual reality uses computers and standardized patient models to generate a simulation that resembles reality. It can be used to instruct students in complex situations, as some even allow students to care for more than one patient simultaneously (Red de Simulación en Salud, 2023).

● **A combination of simulations**: "mixed simulation is the use of a variety of different simulation modalities. Use of multiple simulation types in the same scenario or location." (Lioce et al., 2020).

An integration of different types of simulations is used to generate a more authentic experience. This methodology also allows students to practice multiple skills simultaneously. For example, one scenario might involve a simulated patient with a suture device. In this way, the student can practice suturing a wound while interacting with the patient to obtain informed consent and explain the procedure (Red de Simulación en Salud, 2023).

3.3. Clinical Simulation Stages

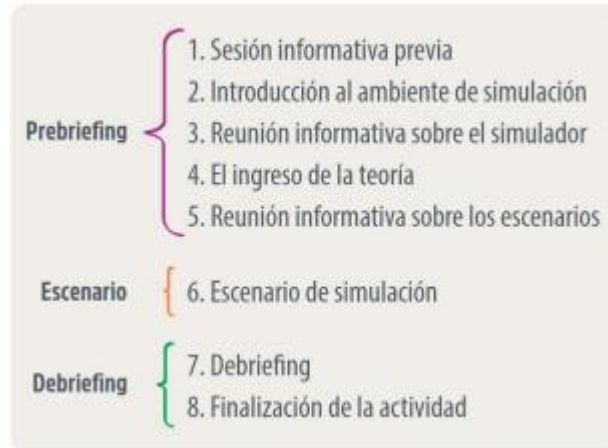According to Dieckmann, the following steps should be considered when planning activities with simulation:

Figure: Simulation stages (Hernández Gutiérrez, Barona Nuñez, Lopez León et al., 2023)

Prebriefing

Refers to the above activities that must be performed prior to the start of the simulation, these activities involve preparation and briefing. Prebriefing should ensure that simulation students are prepared (INACSL, 2023).

Prebriefing should provide students with the necessary information before they participate in the simulation for their experience to be successful. This involves: planning the activities in advance, defining the place where the simulation will take place (simulation environment), presenting the equipment available for the simulation (such as vital signs monitors, stethoscopes, medical equipment, simulators, etc.), and organizing the necessary support personnel for the practice (such as nurses, physicians, patient's relatives, etc.). All this is done in order to create a safe environment that promotes effective learning (Hernández Gutiérrez, Barona Nuñez, Lopez León et al., 2023).

Scenario/simulated clinical case

It is about the experience to be used for learning. The objective of the scenario is for participants to experience their limitations and experience situations that will allow them to reflect on their behavior and actions during the Debriefing. It is important that the Simulated Clinical Scenarios/Cases show interesting situations, preferably in multidisciplinary settings and avoiding catastrophic situations.

Debriefing (reflection stage):

Debriefing is key to clinical simulation. A well-conducted debriefing should lead to reflection on the experience developed, reinforcement of the good practices detected, and learning from mistakes. It addresses the frameworks of thought, emotions, beliefs, and values that led participants to perform in that way. It should be planned in a way that addresses perspective analysis, relates theory to practice, and orients the experience in a manner consistent with the learning objectives. The purpose of debriefing is to generate the desire to modify the participants' behavior by understanding the frameworks (right or wrong) that lead them to behave in a certain way.

During Debriefing, the use of Argumentation and Persuasion is a questioning technique that can be very useful to understand how to share the frames of thinking and understand the frames of the simulation participants in a non-judgmental and positive approach.

During the Debriefing, it is advisable to have a recording of the experience to show the video segments that are addressed.

At the end of the reflective process, a satisfactory closure should be carried out for all participants, the experience should be evaluated, tasks should be left for continuous learning, learning contracts should be drawn up, etc.

3.4. Security

Patient safety represents a significant challenge for public health globally. It is an essential principle that requires the adoption of substantial measures to prevent any type of negative incident, which may originate from failures in medical practice, products, procedures, or systems.

In developed countries, statistics show that up to 1 in 10 patients suffer harm during hospital care, while the risk of suffering harm or contracting healthcare-associated infections is up to 20 times higher in the African Region. In recent years, there has been growing recognition of the importance of improving patient safety globally, which is reflected in resolutions adopted by the World Health Assembly (World Health Organization-African Region; World Health Organization, 2023).

Safety is the fundamental pillar in the application of simulation. In fact, it is the central element underpinning all values, as safety represents an essential motivation for using simulation. Likewise, it is crucial to conduct the simulation in a safe manner, seeking to minimize risks for all parties involved, regardless of the activity performed (Lewis et al., 2017).

3.5. Professional integrity

Professional integrity must be exercised and demonstrated by all participants in simulation-based experiences. It is the internal system of principles of each person, which encompasses a series of additional attributes that are interrelated: confidentiality, compassion, honesty, commitment, collaboration, mutual respect, and involvement in the learning process (INACSL, 2023).

Many organizations have addressed professional integrity and its role in simulation-based experiences (INACSL, 2023):

- Society of Simulation in Healthcare published "*Code of Ethics Society Simulation*" (Park, Murphy, the Code of Ethics Working Group, 2018)
- Association of Standardized Patient Educators published "The Association of Standardized Patient Educators (ASPE) Standards of Best Practice (SOBP)" (Lewis, Bohnert, Gammon, et al., 2017)
- Interprofessional Education Collaborative published "Core competencies for interprofessional collaborative practice: 2016 update" (Interprofessional Education Collaborative, 2016).

In a simulation-based experience, as in real professional practice, beyond the specific responsibilities of each individual, it is crucial that all participants (students, teachers, simulated patients, etc.) commit to high standards of professional integrity and develop a deep self-awareness of how their actions may

affect others, all of whom may be vulnerable to some extent. Therefore, it is essential to maintain professional boundaries to ensure that learning outcomes obtained from simulation are not compromised (INACSL, 2023).

The compliance criteria for professional integrity not to be compromised according to International Nursing Association of Clinical Simulation and Learning are:

- "Honor and uphold the Code of Ethics for the Health Simulationist.
- Follow the standards of practice, guidelines, principles, and ethics of one's profession.
- Create and maintain a safe learning environment.
- Practice inclusiveness by respecting equity, diversity, and inclusion among all stakeholders and in all aspects of the simulation-based experience.
- Require confidentiality in the development and content of the scenario according to the institution's policies and procedures." (INACSL, 2023)

4. Clinical simulation phases

The phases of clinical simulation necessarily involve a closed cycle based on continuous improvement:

Figure: Phases of clinical simulation (Abellán et al., 2012)

4.1. Simulation design

INACSL states that, in order to carry out an adequate design/planning of a simulation in the nursing setting, the following aspects should be considered (INACSL, 2023):

1. Simulation-based experiences (SBEs) should be designed in consultation with content experts and simulationists with expertise in simulation education, pedagogy, and practice.
2. There must be measurable objectives on the fundamental knowledge to be acquired by the student.
3. The simulation-based experience must be aligned and responsive to the required learning objectives.
4. Simulation-based experience must be relevant.
5. The simulation-based experience must be realistic in order to favor an adequate immersion in the situation by the participants.
6. Several types of fidelity should be used to create the required perception of realism.
7. Planning should be based on a facilitative, learner-centered approach, based on the objectives, knowledge, and experience level of the learners and the expected outcomes.
8. Build a prebriefing plan that includes preparation materials and briefing to guide the success of the participants' simulation experience.
9. After the experience, incorporate a debriefing or feedback session and/or a guided reflection exercise.
10. Incorporate a plan for student and simulation-based experience evaluation.
11. Simulation-based experiences need to be tested prior to full implementation.

4.2. Case design

The design of clinical cases is similar to the elaboration of a movie script due to its creative nature, where every detail is crucial. When developing simulation experiences, it is essential to consider the following:
- Ensure that the case addresses issues relevant to users' learning needs.
- Ensure that it is supported by scientific evidence and not simply a narrative.
- Convey authenticity and realism.
- Provide a path to discovery, with interesting challenges.
- Provide the right amount of data to address the problem.
- Ensure that the case is correctly structured and easy to read and understand.
- Be concise in length, preferably short cases.
- Consider feasibility in terms of human and material resources.
- Include key points for assessing the achievement of learning objectives.
- Avoid leaving loose ends, nothing can be left to chance since this is an activity with important implications for student learning (Abellán et al., 2012)

The difficulty of the case may vary depending on the objectives and the student's level of knowledge.

The structure of the cases should be standardized with the design of templates to support the construction of simulated clinical cases in order to simplify their design and construction (see annexes).

4.2.1. Resources required for the simulation

It must be determined, even if not precisely, due to the alterations that may result from the development of the simulation with respect to what was planned:

- Participants: determine the number of participants, their role (doctor, nurse...)
- Instructors: the number and whether actors will be required, for example.
- Simulator, room, accessories, whistles, and bells: environment, sounds, etc.
- Briefing (Preliminary report)

4.2.2. Realism

In the design of the scenarios/simulations, it is advisable to consider the different existing models to ensure that the simulation is as faithful as possible to reality. Its realism will be determined by several factors, including the attitude of the participants themselves.

Realism is conditioned by:
- the physical appearance: it should be as close to reality as possible, even if it is not always possible to be exact (for example, the skin of the simulation doll will never be the same as a real skin)
- the semantic aspect: the names used to address the materials must be faithful to reality, even if they are fictitious (e.g.: adrenaline capsules, even if they do not contain adrenaline)
- the phenomenological aspect: physiological phenomena should be shown (for example, applying adrenaline to the simulated patient should increase the heart rate) or non-physiological phenomena (for example, a mother crying in a tense simulated situation).

4.3. Scenario types

The types of scenarios should be varied and represent real-life situations, such as:
- Patient with one or more health problems that must be identified
- Fixing traps
- Complex scenarios (many interrelated options)
- Incorporate situations of pressure (time or social)
- Add a second problem that starts from the approach to the first problem.

4.3.1. Recommendations regarding stage manipulations

- It is advisable to immediately start the reality with the simulator as soon as you enter the room.
- The situations created may originate wrong paths but never by deception, but by situations that occur in reality, such as: lack of information or communication situations, etc.
- It is very important to observe the interactions/communications that originate among the participants (patient, colleagues, team...)
- All mistakes can be made even by experts, we try to minimize them: the idea is to reach this conclusion in the debriefing without judging people.
- Incorporate realistic disturbances: minor technical problems, phone call(s), witness comments, people entering or leaving the room, etc.
- Actors: own (already trained) or external participants (incorporates interesting surprises and new points of view, although it requires better introduction and may present problems of overinterpretation).

- It is convenient to consider the incorporation of Life Savers (previously considered): to incorporate actions that "facilitate" the reorientation of the case in situations that are not well-oriented to the fulfillment of the objectives of the case... or to make the situation more complex in the case of a very quick resolution.

4.4. Case development or implementation

The case development or implementation process consists of the execution of the simulation experience, according to the plan established for the designed case. The execution of the case requires the reservation of the necessary space and material resources, as well as the coordination of all the participants and the management of the time allocated to the preparation of the scenario.

The simulation experience can be recorded and, in turn, viewed by the entire group of students.

During the observation of peer performances, each student records in a template the most significant aspects that are being developed both in terms of technical and non-technical skills, which will provide a memory aid for other moments, such as debriefing.

4.5. The role of the facilitator

The diversity of facilitation methods implies that the choice of a particular method is conditioned by the individual learning requirements of the learner, as well as by the learning objectives. In this context, facilitation provides both the necessary structure and the process required to lead participants toward effective collaboration, understanding of the learning objectives, and formulation of a plan to achieve the desired outcomes. In this sense, the facilitator stands as the educator in charge of assuming the integral direction and supervision of the simulation-based educational experience (INACSL, 2023).

According to the Healthcare Simulation Standards of Best Practice™ (INACSL, 2023):

1. "Effective facilitation requires a facilitator who has specific skills and knowledge in simulation pedagogy.
2. The facilitator's approach is appropriate to the participants' level of learning, experience, and competence.
3. Facilitation methods prior to the simulation-based experience include preparatory activities and prebriefing to prepare participants for the simulation-based experience.
4. Facilitation methods during a simulation-based experience involve the delivery of cues (predetermined and/or unplanned) intended to help participants achieve the expected outcomes.
5. Facilitation after and beyond the simulation-based experience aims to support participants in achieving the expected outcomes."

Simulationist/Facilitator Professional Development

The initial and ongoing professional training of the simulation professional is essential throughout his or her career. This is a fundamental requirement to keep up with the constant changes and developments that are documented in the literature on evolving professional standards within the field of simulation-based education (INACSL, 2023).

According to the Healthcare Simulation Standards of Best Practice[TM] (INACSL, 2023), you should:
1. "Conduct an educational needs assessment that includes a gap analysis that allows for the implementation of a well-designed professional development plan.
2. Participate in professional development activities that address the desired learning outcomes in a manner aligned with the role to be performed and the institution's training project.
3. Conduct a re-evaluation of the development plan on a regular basis for the individual and participating institutions."

4.6. Debriefing: reflection for learning

All simulated experiences should incorporate a carefully designed debriefing process to encourage critical reflection. The acquisition of knowledge is intrinsically linked to the ability to integrate lived experience with the corresponding reflection. Reflection implies a conscious evaluation of the meaning and implications of the actions carried out, which involves the assimilation of previous knowledge, skills, and attitudes, and may lead to new perspectives on the part of the learner. It is essential to understand that reflection does not come automatically, but it can be taught with dedication and time. It is optimally activated in realistic experiential contexts, with the effective guidance of a trained facilitator (Román Cereto, 2017).

The competence of the facilitator is crucial to ensure effective learning. The absence of adequate guidance may lead to the repetition of errors, exclusive focus on negative aspects, or the development of cognitive biases. In addition, students identify the analysis session as the most significant component within a simulation-based learning experience (Román Cereto, 2017).

The benefits of incorporating the debriefing process into the simulation are as follows:
- Improves the learning process.
- Strengthens the student's self-confidence.
- Increases understanding.
- Facilitates knowledge transfer.
- Recognizes best practices.
- Does not compromise patient safety.
- Stimulates lifelong learning (Román Cereto, 2017).

According to the Healthcare Simulation Standards of Best Practice[TM] (INACSL, 2023), the debriefing process must meet the following criteria. It must be:
1. "Planned and incorporated into the simulation-based experience in a manner adequate to guide the learner(s) in achieving the desired learning or assessment outcomes.
2. Constructed, designed, and/or facilitated by a person(s) or system capable and/or competent to provide adequate feedback, debriefing, and/or guided reflection.

3. Performed in a manner that promotes individual, team, and/or systems analysis. This process should encourage reflection, exploration of knowledge, and identification of performance and/or system deficiencies while maintaining psychological safety and confidentiality.
4. Purposefully planned and structured from theoretical frameworks and/or evidence-based concepts."

5. Clinical simulation in nursing

In the field of nursing, given its particularities, it is necessary to incorporate educational approaches that promote the integration of knowledge in the clinical context. This involves not only assessing theoretical knowledge but also practical skills and attitudinal competencies, encompassing what the individual knows, can do, and actually does (clinical competencies) (Abellán et al., 2012).

Simulation-based learning facilitates the learning and assessment of clinical and professional competencies, promoting meaningful learning, learner autonomy, self-confidence, and problem-solving skills. In addition, it allows teaching and evaluating non-technical skills such as teamwork, communication, and leadership, being a safe alternative for skills training when actions may compromise clinical safety (González-Rodríguez, 2018).

The inclusion of simulation in nursing study plans is fundamental to achieve learning, complementing theory and practice by serving as preparation before students face real patients. The integration of simulation in the professional training of nursing staff is justified for several reasons and principles:

- Ensures uniformity in students' clinical experiences.
- Facilitates the acquisition of skills through repetition of procedures.
- Allows students to face unusual situations.
- Prepares students to handle critical situations that may arise throughout their academic and professional careers.
- Enables them to cope with risky environments.
- Simulation fosters reflection through debriefing, a crucial element of the educational process and gives the teacher the opportunity to evaluate the actual learning during and after the simulation, thus ensuring the achievement of the educational objectives set, something that is not always achieved with traditional teaching (Escudero, Avendaño Ben-Azul, Domínguez Cancino, 2018).

Additionally, in undergraduate nursing education, ensuring patient safety together with the progress of new technologies has established clinical simulation as an innovative and appropriate methodology to develop and evaluate clinical and professional skills (Abellán et al., 2012).

In undergraduate nursing education, all types of clinical simulation are valid. The choice of one or another simulation model depends on the educational stage of the students and the skills to be developed. For example, the use of partial task simulators is recommended to learn particular techniques such as catheter insertion, intubation, or cardiac massage after having acquired theoretical knowledge. On the other hand, when it comes to practicing skills such as teamwork, leadership, and decision-making in critical situations, whether realistic or not, more complex simulators and scenarios that resemble reality as closely as possible, such as high-fidelity simulation, are preferred (Alinier, 2007).

5.1. Clinical simulation of nursing students in Africa

Below are some examples of clinical simulation experiences in nursing in the African context:

South Sudan, Tanzania, and Namibia

In the study by Jami Baayd et al., individual interviews were conducted with simulation experts who had been directly involved in the introduction or application of simulation in nursing or midwifery education in the United States, Africa, and Asia; countries representing different geographic regions and cultural backgrounds, as well as high, medium, and low resources. In the African context, the expertise of these experts was located in nursing schools in South Sudan, Tanzania, Namibia.

The researchers concluded that integrating simulation into initial training study plans has numerous benefits for trainees, which also contributes to improved outcomes in the future. The key to optimal nursing simulation practice is not the type of equipment used or the design of the simulation lab but rather the commitment and enthusiasm of both faculty and students. The effectiveness of the implementation of simulation programs in environments with limited or moderate resources depends on the willingness of those responsible to know the particularities of these specific environments in order to adapt the simulation to the cultural and contextual characteristics of the students. It is also crucial to engage key stakeholders early in the process and to recruit, train, and support teaching staff who are committed to integrating simulation into nursing curricula. On the other hand, introducing students to simulation early on will help the program gain momentum and acceptance (Baayd et.al, 2023).

Tanzania and Madagascar

Tjoflåt, Koyo, and Bø analyzed the experiences of teachers at two nursing schools in Tanzania and Madagascar (low-income countries in sub-Saharan Africa) where simulation is included in their curricula. Most of the teachers had extensive teaching experience, but it should be noted that this was the first time they acted as facilitators during the sessions.

The results indicated that teachers valued simulation as an effective valuable pedagogical method for nursing students' learning and putting competencies into practice. At the same time, teachers also identified challenges to be overcome with simulation as a pedagogical method, namely, time constraints, the high number of students, and the difficulty of incorporating the method into a loaded study plan. These situations reflect the fact that the two nursing education programs in the study are located in low-income countries, where educational resources are limited and have a high number of students compared to faculty resources (Tjoflåt, Koyo, & Bø, 2021).

Tanzania

Following a cooperative project between nursing teachers from a nursing school in rural Tanzania and nursing teachers from a Norwegian nursing school, the experiences of teachers and students in nursing education programs where simulation practices have been implemented were analyzed. In general, the simulation method was new to the Tanzanian teachers and students, and the Norwegian teachers led the simulation sessions.

After the simulation experience, participants stated that it allowed them to experience an approximation to real professional practice, that they were able to understand that simulation-based education is beneficial, and they also felt that it could improve clinical practice.

In conclusion, the experience of integrating simulation-based education into a nursing education program in a low-income setting in Tanzania was very positive and beneficial to nursing students. It should be noted that local nursing professors referred concerns about issues related to staff resources due to the fact that the number of professors is limited compared to the number of nursing students (Tjoflåt, Våga, Søreide, 2017).

All these experiences show that although the integration of simulation has increased in undergraduate nursing education in Europe, the United States, Asia, the Middle East, and Australia, the literature shows a lack of implementation and research on simulation in low- and middle-income countries, specifically in Africa.

In addition, the implementation of simulation in undergraduate nursing education in Africa, especially in low-income countries, should be present in the design and planning of the curricula of the different programs. Its value in African nursing programs lies in its contextual relevance, its adaptation to resource constraints, its innovative teaching methodologies, provision of a safe learning environment, promotion of interprofessional collaboration, and potential for research and evidence generation. These factors contribute to the advancement of nursing education in Africa and improved healthcare outcomes in the region.

In addition, its value in African nursing programs lies in its contextual relevance, its adaptation to resource constraints, its innovative teaching methodologies, provision of a safe learning environment, promotion of interprofessional collaboration, and potential for research and evidence generation. These factors contribute to the advancement of nursing education in Africa and to the improvement of health care outcomes in the region, so we believe that it should be present in the design and planning of the curricula of the different programs.

Service-Learning: Service learning for the community

Service-Learning is an educational approach that promotes active learning through student participation in community action activities. This educational proposal combines learning and community service processes in a single well-articulated project where participants learn by working on real needs of the environment in order to improve it.

ApS must be understood not only under an educational approach but also under a social development approach.

This type of learning is very beneficial for the student as it allows him/her to connect and experience what he/she has learned in the classroom with situations that occur in a real context and with real people/patients.

Service-Learning can be developed in different contexts where there is a need that can be addressed by the student body. Given the high need for human resources in the health field in the country of Angola, the Clinicalsim method includes this type of dual-purpose learning:

- encourage student participation in the real needs of the environment in order to improve it and generate good citizens.
- expose students to learning experiences of their profession with real people, thus provoking their exposure to more effective learning methods.
- promote the implementation and development of services aimed at the community from the universities through well-articulated projects (Henríquez-Melgarejo, 2023)..

Modalities

Three possible modalities of student participation are considered: receptive, collaborative, and impulsive. Each of these typologies has positive and negative aspects (Red Española de Aprendizaje-Servicio, 2024).

Modalidad	Puede ser positiva si...	Puede ser menos positiva si...
I Receptiva	**Es un primer paso:** ■ El grupo necesita un proyecto muy pautado para empezar ■ La acción de servicio resulta un reto motivador para los chicos y chicas.	**No es interesante:** ■ Se presenta como una obligación más. ■ No tiene en cuenta los intereses y necesidades de los chicos y chicas. ■ No representa un reto estimulante.
II Colaborativa	**Consolida un proyecto emblemático:** ■ Proyecto ApS tradicional o emblemático en el centro educativo. ■ Cada año los chicos y chicas aportan su particular sello.	**Ahorra reflexión e investigación:** ■ No se investiga el problema o se disminuye la reflexión acerca del mismo. ■ En consecuencia, el proyecto pierde envergadura y se trivializa.
III Impulsora	**Conecta con el entorno:** ■ El servicio responde a una necesidad real y sentida por la comunidad. ■ Los chicos y chicas tienen en cuenta a las iniciativas existentes en el entorno.	**El proyecto es frívolo o endogámico:** ■ El problema escogido es superficial y no tiene en cuenta problemas reales. ■ Se prescinde de las iniciativas sociales que actúan en el entorno.

Phases

In general, the implementation phases are organized as shown in the following table:

Preparation	1. Idea: Analysis of problematic situation for the definition of actions 2. Establishment of relationships with social entities in the community 3. Project planning

Realization	4. Preparation with the group
	5. Execution with the group
	6. Closing with the group
Evaluation	7. Multifocal evaluation

Learning and performance evaluation

Simulation-based experiences should include student assessment. These are experiences that support the evaluation of students' knowledge, skills, attitudes, and behaviors demonstrated in the cognitive (knowledge), affective (attitude), and psychomotor (skills) domains of learning. Formative student evaluation is intended to foster development and assist in progression toward achievement of outcomes or objectives. Summative assessment focuses on measuring the results or achievement of objectives at a particular point in time, for example, at the end of a study program. High-Stakes, or high-level, evaluation refers to an evaluation that has significant outcome-based or objective-based implications or consequences, such as merit pay, progression, or grades.

Research has identified learning benefits for the student who conducts the simulation experience but also for the student who participates as an observer of the simulation (Johnson, 2019). If the student has an observer role in the simulation, the facilitator may consider observer evaluation (Regan et al, 2016).

Evaluation of the student(s) using SBE includes the following elements:
- Determine the type of evaluation for the SBE.
- Design the SBE including the timing of the evaluation.
- Use valid and reliable evaluation instruments.
- Training of the evaluator.
- Completion of the evaluation, interpretation of the results, and delivery of feedback to the student(s)

Curricular integration

Curricular integration should be carried out based on the improvement of the learning objectives required by students to improve their professional competencies. To this end, consideration should be given to:

1. Curricular redesign
2. Identification of needs
3. Identification of methodologies associated with expected educational results
4. teacher training
5. Equipment and facilities available

6. Start of operations

In the analysis of learning objectives, it should be noted that Simulation (Role Models, artificial models and simulation, standardized patients, or audio/video review by the student) corresponds to models that favor the acquisition of learning objectives of a psychomotor nature (related to the acquisition of skills or competencies) but also influences the acquisition of attitudinal objectives (Kem, 2009) thanks to the relevance of reflection on the experience and/or performance feedback.

Método Educativo	Tipo de Objetivo				
	Cognitivo Conocimiento	Cognitivo Resolución de Problemas	Afectivo Actitudinal	Psicomotor Habilidad o Competencia	Psicomotor Conducta o Desempeño
Lecturas	+++	+	+	+	
Conferencias	+++	+	+	+	
Aprendizaje Programado	+++	+	+	+	
Discusión	++	++	+++	+	+
Reflexión de la experiencia			+++	+++	+++
Retroalimentación del Desempeño	+	++	++	+++	+++
Aprendizaje en pequeños grupos	++	++	++	+	+
Aprendizaje basado en problemas	++	+++	+		+
Aprendizaje basado en equipos	+++	+++	++	+	+
Proyectos de aprendizaje	+++	+++	+	+	+
Modelos de Rol		+	++	+	++
Modelos artificiales y simulación	+	++	++	+++	+
Pacientes Estandarizados	+	++	++	+++	+
Experiencias de la vida real	+	++	++	+++	+++
Revisión de audio/video por el estudiante	+			+++	+
Intervenciones conductuales/ambientales*			+	+	+++

Nota: en blanco = no recomendado; + = apropiado en algunos casos, generalmente como complemento de otros métodos; ++ = buena correspondencia; +++ = excelente correspondencia (conenso por autores y editores). *Remover barreras para el desempeño; proveer de recursos que promuevan el desempeño; reforzamientos que promueven el desempeño.

Tomado de: Thomas PA. Educational Strategies in Kern DE, Thomas PA, Hughes MT. Curriculum Development for Medical Education: A Six Step Approach. Johns Hopkins. 6th edition. 2009.

6. Implementation of the Clinicalsim Model

The learning process of the Clinicalsim model is based on clinical simulation and critical reflection as fundamental pillars for the improvement of nursing practice education. In addition, to incorporate the Final evaluation as part of the process of continuous improvement of the simulation and reflection situations applied.

includes three clearly differentiated phases:

- Practice Scenarios:
    - High-fidelity simulation
    - Training multimedia material
    - Service-Learning (Nutrition)

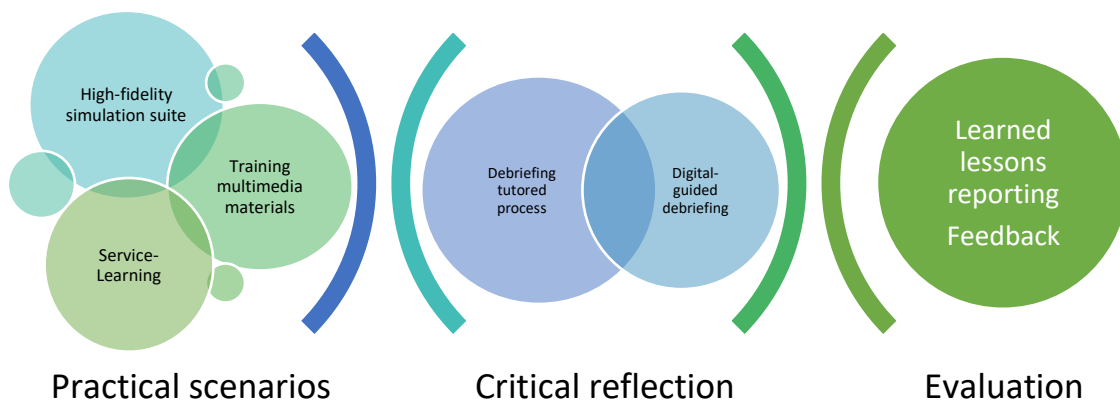- Critical Reflection (Debriefing)

- Evaluation

High-fidelity simulation suite
Training multimedia materials
Service-Learning
Debriefing tutored process
Digital-guided debriefing
Learned lessons reporting
Feedback

Practical scenarios   Critical reflection   Evaluation

Figure 2. Learning process in the CLINICALSIM project

6.1 Practical scenarios: high-fidelity simulation

High-fidelity simulation is a method that necessarily involves the acquisition of excessively expensive materials for educational institutions. The Clinicalsim Method aims to democratize access to these clinical situations.

In the context of the project, the Universidade Interancional do Cuanza (UNIC) acquires material that, together with the material it already has, will be used for the development of these sessions with its students. However, the Clinicalsim method allows the connection of other institutions so that they can access the development of the simulation in real time and/or deferred basis. In this way, these institutions can access the experience from a distance and participate as observers.

Afterwards, each of the participating institutions will individually carry out a critical reflection process, called Debriefing.

Teachers from other institutions who have completed the corresponding Clinicalsim Method Training and who so wish may request the possibility of being present, in face-to-face format, at these sessions. To complement its virtual theoretical training with the development of the same in person.

The Clinicalsim method will also offer a digital space where the different institutions will be able to socialize the debriefing with other participating institutions, in second instance.

In this way, the Clinicalsim model aims to generate a change in the improvement of training in Angolan universities, even though they are not direct participants in the project.

6.1.1 Practical scenarios: Training through multimedia materials

In the context of Angolan universities offering the Bachelor of Science in Nursing, the lack of access to high fidelity clinical simulation equipment due to economic constraints has been a significant challenge. However, an innovative solution has emerged through the Clinicalsim project, which offers an accessible and effective alternative to enrich the learning experience of students in all educational institutions in the country.

Most educational institutions in Angola face financial constraints that make it difficult to acquire high-fidelity clinical simulation equipment, which is often expensive. Aware of this reality, Clinicalsim will develop multimedia materials that allow students to participate in simulated situations under the role of observers, even when they do not have direct access to the physical equipment.

These multimedia materials provided by Clinicalsim offer a detailed and realistic representation of clinical scenarios, allowing students to immerse themselves in complex and challenging situations. Although they cannot interact directly with the simulation equipment, the observation experience is still valuable, as it allows them to develop observation, analysis, and decision-making skills.

However, the most relevant part of learning clinical simulation lies not only in the exposure to the scenarios but in the debriefing process that follows the simulation visualization. It is during this process that students have the opportunity to reflect on their performance, discuss strategies, and receive constructive feedback from their instructors and peers.

It is important to highlight that the development of audiovisual materials for clinical simulations will be carried out at the facilities of the Universidade Internacional do Cuanza (UNIC) in Angola. This collaboration has been instrumental in the creation of high-quality and relevant multimedia material for nursing students in Angola.
In summary, Clinicalsim offers an innovative solution to overcome economic limitations in accessing clinical simulation equipment, allowing nursing students in Angola to participate in enriching learning experiences that contribute to their professional training.

6.1.2 Practical scenarios: Service-Learning or Service-Learning for the community

The implementation of Service Learning (ApS) in the educational curricula of nursing graduates in Angola represents an invaluable opportunity for both students and society as a whole. In a context where health needs are high and trained human resources are scarce, Service Learning emerges as an effective strategy to address these challenges in a comprehensive manner.

It is an educational methodology that is mainly framed within the scope of formal education to educate in values and for citizenship, combining volunteer work in the community with reflective learning of knowledge, skills, and values. For the students, its application consists in training them by working on real needs and for the improvement of their living environment. For institutions, it is a way of exercising their social responsibility by linking the institution with society and its needs.

The benefits for both students and Angolan society are detailed below:

Student Benefits:

1. Practical Application of Knowledge: Service Learning offers students the opportunity to apply the theoretical knowledge acquired in the classroom in real healthcare situations in the community. This hands-on experience strengthens their understanding of the concepts and provides them with clinical and problem-solving skills critical to their professional development.

2. Interpersonal Skills Development: By interacting directly with patients and local communities, students improve their communication, empathy, and teamwork skills. These skills are essential for providing quality care and establishing effective relationships with patients and their families.

3. Social Awareness and Civic Responsibility: Engagement in Service Learning activities fosters social awareness and civic responsibility in students while sensitizing them to the needs and challenges of underprivileged communities. This promotes a broader and more supportive perspective in their future professional practice.

Benefits for Angolan Society:

1. Improving Access to Health Care: The participation of nursing students in Service Learning programs increases the availability of health care services in marginalized communities or communities with limited access to health care. This contributes to improving access and equity in the provision of health services throughout the country.

2. Strengthening of the Health System: The involvement of students in Service Learning projects provides an additional boost to Angola's healthcare system by increasing the number of trained and committed professionals. This contribution is especially significant given the shortage of human resources in the country's health sector.

3. Health Promotion and Disease Prevention: Service Learning activities focus on health promotion and disease prevention at the community level. Students can educate the population about preventive health practices, which helps reduce the incidence of preventable diseases and improves the overall well-being of the population.

In conclusion, the integration of Service Learning into nursing education curricula in Angola offers significant benefits for both students and society as a whole. This strategy not only enriches the

academic training of future health professionals but also contributes to addressing urgent health needs and strengthening the country's health system.

6.1.2.1 Importance of Monitoring and Communication in Service Learning Activities: The Contribution of the Clinicalsim Model in Angolan Contexts

Successful implementation of Service Learning activities requires not only strong engagement with external institutions but also effective follow-up and communication by the teaching team. It is critical to ensure that students receive the proper guidance and supervision necessary to maximize the positive impact of their actions in the community. In the Angolan context, where the vast geography and lack of public transportation infrastructure represent significant challenges, this need becomes even more pressing.

The Clinicalsim model offers an innovative solution to address these difficulties by providing educational institutions with specialized software that facilitates tracking and communication with students participating in Service Learning activities. This software, tailored to the specific needs of educational and healthcare environments in Angola, allows:

1. Remote Activity Tracking: Clinicalsim software allows the teaching team to monitor students' progress in real time during their service, even when they perform activities in environments far from the educational institution. This ensures continuous monitoring and the ability to intervene quickly in case of need.

2. Efficient Communication: Since face-to-face communication can be difficult in remote locations and with limited transportation infrastructure, Clinicalsim software facilitates two-way communication between students and faculty through online platforms. This ensures smooth interaction and a timely response to any questions or concerns that may arise during the conduct of the Service Learning activities.

3. Registration and Evaluation of Results: Clinicalsim software also allows teachers to keep a detailed record of the activities performed by students, as well as to evaluate their results and contributions to the community. This facilitates constructive feedback and evaluation of the impact of Service Learning activities on the academic and professional development of students, as well as on the well-being of society.

In summary, the implementation of the Clinicalsim model in educational institutions in Angola offers an effective solution to overcome the logistical and communication challenges associated with Service Learning in remote environments. By facilitating follow-up and communication with students, this software contributes significantly to ensuring the success and effectiveness of Service Learning activities, thus promoting a positive impact on both the training of students and the well-being of Angolan society.

6.2 Implementation of the model for Angolan Universities

The implementation of an innovative educational model in Angolan universities offering the Bachelor of Science in Nursing is a strategic process that requires careful planning, a structured approach, and efficient execution adapted to the specific situation of each educational community and its environment. The following are the key steps to effectively carry out this process:

1. Teacher Training:
   - Clinicalsim includes a professional training program for teachers to familiarize them with the educational plan of the new model, as well as to train them in the application with nursing students of the Clinical Simulation Cases, Service Learning, and other related pedagogical and technological tools provided by the project.
   - Ensuring the availability of properly trained faculty is critical to implementing the model.

2. Evaluation of the Existing Curriculum:
   - Each university should conduct a thorough evaluation of its current curriculum, identifying areas that require improvement and aligning them with the learning objectives defined in the learning experiences of the Clinicalsim educational model. To do so, they should identify the subjects where the integration of clinical simulation cases and service learning activities provided by Clinicalsim is appropriate.

3. Adoption and development of Clinical Simulation Cases:
   - Integrate clinical simulation cases into the curriculum, designed to provide students with realistic hands-on experiences that complement their theoretical learning and promote clinical and decision-making skills based on real-life situations.

4. Procurement of Materials and Resources:
   - Universities must ensure the availability of the materials and resources necessary for the effective implementation of the educational model.
   - It should be noted that the development of high-definition Clinical Simulation Cases requires very expensive equipment, which may be inaccessible to most educational institutions in the country. In this sense, Clinicalsim offers the possibility for students from different institutions to experience simulation through audiovisual means, at a distance. However, the institutions will need to acquire some minimum equipment related to image projection, Internet...

5. Collaboration with external entities to offer Community Service:
   - Each institution should identify and establish collaborations with external entities (such as hospitals, health centers, and community organizations) that can provide suitable environments for the development of service learning activities, ensuring that students have the opportunity to apply their knowledge and skills in real community contexts while contributing to the well-being of society.

6. Pilot Implementation:
   - The Clinicalsim model has been tested by the educational institutions participating in its development. However, it is a novel method for Angolan university institutions in their daily practice. Therefore, it is advisable for each institution to conduct a pilot implementation of the educational model on a selected group of students taking the affected courses or subjects, so that they can evaluate its effectiveness and make necessary adjustments before full-scale implementation.
   - The pilot implementation should address both Clinical Simulation Cases and Service Learning Activities. The latter are particularly relevant

7. Continuous Evaluation and Feedback:
   - Establish continuous evaluation mechanisms to monitor the progress of the implementation of the educational model, gather feedback from students and teachers, and identify areas for improvement.

8. Capacity Building for the Creation of Practical Cases:
   - The implementation process of the Clinicalsim Model aims to train teachers and academic staff in the methodology to develop new case studies based on the experience acquired with the educational model, thus promoting continuous innovation and adaptability of its curriculum.

9. Sustainable Curriculum Integration:
   - The last step consists of incorporating the innovative educational model into the curricular structure of the Bachelor of Science in Nursing in a sustainable manner, ensuring its continuity and relevance in the long term.

10. Operations:
    - Implementation of systems and infrastructure to help maintain operations in simulation (infrastructure, people, processes...).

By following these steps with attention and commitment, universities in Angola can successfully implement an innovative educational model that improves the quality of Bachelor of Science in Nursing education, prepares students to meet the challenges of the healthcare field in real-world settings in an effective, safe, and holistic manner. In addition, the community will benefit from activities that will favor the development and well-being of the population.

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International digital resources

Society of Simulation in Healthcare
http://www.ssih.org/public/
Journal: Simulation in Healthcare

International Nursing Association for Clinical simulation and Learning
http://inacsl.org/
Journal: Clinical Simulation in Nursing

Society in Europe for Simulation Applied to Medicine
http://www.sesam.ws/

Advanced Initiatives in Medical Simulation (AIMS)
http://www.medsim.org/aboutaims.asp
Advanced Initiatives in Medical Simulation or AIMS is a coalition of individuals and organizations committed to promoting medical simulation

Center for Immersive and Situation-based Learning
http://cisl.stanford.edu/
Applications of simulation-based learning target healthcare personnel in general and Stanford Medical Center's students, residents, clinical fellows, and postdoctoral scholars. The information contained on the page is sponsored by David Gaba and his faculty at Stanford University. Most of the faculty is respected in simulation, as much research and innovation has come from this institution. Several courses in simulation and anesthesia crisis resource management are offered

Advanced Human Patient Simulation User Site
http://www.patientsimulation.co.uk/
This is a free of charge Web site to network, obtain scenarios, tips and tricks, etc. To access the scenarios, you must donate one of your own and then access to the rest of the scenarios will be granted

Center for Advanced Medical Simulation Karolinksa University Hospital
www.simulatorcentrum.se/
Several courses for faculty training on CRM in anesthesia and emergency medicine

Center for Medical Simulation, Boston
www.harvardmedsim.org/cms/
A variety of courses including wee-long immersive experience for those who want to develop and maintain healthcare simulation programs. Other course offers training for instructors who teach with simulators and those who have leadership positions

Hertfordshire Intensive Care & Emergency Simulation Centre University of Hertfordshire
www.health.herts.ac.uk/hicesc/
One-day course for participants to learn how to train and teach with simulators and course on multidisciplinary simulation-based training

Mainz Simulation Centre
www.simulationzentrum-mainz.de
Course for participants to develop knowledge and skills in planning, designing, building, and maintaining a simulation center

SIMS Medical Academy
www.healthprograms.org
Beginner- and intermediate-level courses for participants to learn how to develop and implement patient simulation scenarios into their local curriculum

Simulation Center at VA, Palo Alto HCS, Stanford
www.med.stanford.edu/VAsimulator/
Faculty development courses on anesthesia and emergency medicine crisis resource management

University of Pittsburg, WISER
www.wiser.pitt.edu/
A variety of courses covering the foundations for simulation in healthcare, including simulator programming, creating and developing a simulation center as well as faculty facilitator and technica specialist preceptor training

Nursing Simulation Scenario Library
http://cms.montgomerycollege.edu/nursingsims/
The Nursing Simulation Scenario Library is a resource for nursing educators in all settings and made possible by the generosity of the Healthcare Initiative Foundation.

Red Española de Aprendizaje-Servicio
https://www.aprendizajeservicio.net
Institution focused on the dissemination of service-learning, an innovative educational methodology that seeks to reconcile educational success with social commitment.

ANNEX 1: Template for the definition of simulation cases

1. Definition of learning objectives

2. Incident identification:
   What incidents of actual clinical events can lead to learning the objectives described above? Review adverse events, case reports, or experiences that experts can share with you.

3. General description of the case

4. Define the relevant events that have to happen in the scenario to generate this learning:

Event	Expected response from participants	Associated related events

Note: use this information to fill out the scenario design form.

5. Materials and Quantities required.

6. Participants (who, how many, and what role)

7. Other issues to consider:

ANNEX 2: Template for simulation case development

Guidelines for the Design of Simulation Clinical Cases

How to build a good case?

Writing begins with the decision to create a particular learning and ends with the use of the case in the simulation and by the generation of knowledge applied to the learner in the clinical setting.

It is necessary to evaluate beforehand whether this methodology is the most effective in achieving the learning

objectives: assessing strengths and weaknesses.

Decalogue before starting

1. Respect the development of the simulation methodology: Prebriefing, Scenario development, and debriefing
2. The case addresses an issue relevant to the learning needs of students
3. The resolution is based on scientific evidence, not only on clinical history
4. It must appear authentic and real, it must provide materials and resources necessary to achieve the objectives and expected results
5. It may evolve into the discovery of factors that are not obvious at first glance and may pose a challenge
6. It should be easy to reproduce, short, and easy to read
7. It must have the necessary data to try to deal with the problem, neither too much nor too little
8. It must be well structured with points that allow to measure the student's progress towards the objectives we have proposed
9. It must be a learning activity, and we must not leave even the smallest detail unplanned
10. The simulation experience should be tested prior to implementation with students

Clinical Case Design Template for High Fidelity Simulations

Roles:
- Participant (P)
- Instructor (I)
- Technician (T)
- Actor (A)

1.Basic data (I)

1.1 Case Basic Data:

Title/Case name:	Date:

Estimated TOTAL time:
 	
Estimated time by phases:
  - Prebriefing:
  - Case:
  - Debriefing:
	Human resources:

Case summary or patient's medical history:	

1.2 Basic student data:

Course and degree of students/professionals and specialization:	Subject/s:
Student prerequisites necessary for the completion of the simulation: *Knowledge, guidelines or protocols, and/or activities required prior to the simulation (e.g.: previous activities, computer simulations, reading, tests, gamification, etc.)*	

2.Learning objectives/competencies (I)

3.Script (I)
(Full development of the case/situation, with monitor parameters if necessary)

Medical history
- Date:
- Admission:
- Provenance:
- Form of transfer:

  Patient description:
- First and last names:
- Sex:
- Age:
- Weight:
- Height:
- Religion:

  Family contact:
- Relationship: mother/father/son/friend/neighbor
- First and last names:
- Phone:

  Allergies: yes/no
  If yes, please indicate which one:

  Background of interest (medical, surgical, and social)

  Reason for consultation (onset and evolution, symptomatology, previous treatment administered)

  Medical diagnosis/nursing

  Treatment

  Evolution

  Results of diagnostic tests

  Other information of interest

4. Information for participants (P)

(Write the case start information, which the student will receive in the prebriefing.)

5.Information for Instructors and Actors (I, A)

(Write how the case will evolve up to the moment the case is finalized, including emotional fidelity. This information will only be available to instructors/facilitators and actors)

6. Scenario evolution, by events (I, T, P)

(Write how the case will evolve up to the moment the case is finalized, including emotional fidelity. This information will only be available to instructors/facilitators and actors)

Results of learning	Event and time	Facilitating elements for redirecting the simulation (monitor, patient voice, actor, …)	Standard of practice (ideal student performance) DEBRIEFING	Observed performance (DEBRIEFING)

7.Debriefing (I)

Overview of the debriefing/guided reflection for this simulation (remember to identify important concepts): Based on the objectives set, reflect on the standards of practice and performance observed

Main points for reflection: Add any information that can serve as a guide for the instructor on what aspects should be discussed in the Debriefing: case objectives, critical points, common mistakes, moments to ask for help…)

8.Scenario preparation (I, T)

- **Simulated environment:**
  (detailed description of the physical environment to be simulated, including resources and equipment)

- **Simulator required:**
  (indicate the type of simulator, clinical characteristics, and necessary props)

- **Actors:**
  (detailed description of the required physical characteristics)

- **HR:**
  (instructors, facilitators)

- **Checklist of expendable and non-expendable equipment and material**:
  - Equipment:
  - Expendable material:
  - Non-expendable material:

- **Drug checklist**:

- **Checklist of necessary documentation and results of analysis and diagnostic tests**:
  (specify format)

9. Evaluation of learning outcomes or performance indicators (I)

(In case it is a simulation for evaluation purposes, attach the rubric or checklist used)

10. Checklist (I)

Case checklist

Use this list on the day of the simulation preparation:

- The case is defined in accordance with the stated objectives
- Evaluation instruments have been defined
- The person in charge of the simulation has been appointed
- The methodology and the case have been jointly reviewed among the teachers involved
- Available spaces have been reserved
- Participants have been selected.
- Teachers have coordinated with the simulation technician (case, time, scenario, props,...)
- The condition and operation of the simulation laboratory and the audiovisual system have been checked
- The scenario has been prepared to simulate the required physical environment
- The necessary equipment, drugs, and expendable and non-expendable materials have been provided in the laboratory
- Equipment performance tests have been carried out
- Actors have been selected and instructed
- The case has been tested
- All participants have been informed, if applicable, about the day and time, case, objectives, evaluation system, and location of the simulation session

11. Annexes

11a Script for actors (I, A) *(If actors are involved, one per actor)*

PATIENT AND/OR ACTOR (family, professional, others):

1. *How does the participant enter the stage? How the case is initiated.*

2. *What is the initial situation of the case?*

3. *How is the case progressing?*

4. *How does the case end? (To be kept on paper)*

PHRASE CASE COMPLETION: *I am _____, the instructor, the case is closed. Nurse Maria will continue to take care of the patient."*

11b. Bibliography

(Scientific evidence/background/relationship to the subject justifying it)

ANNEX 3: Template for Service-Learning case development

3.1. CLINICALSIM MODEL SHEET/REGISTER OF SERVICE-LEARNING PROJECTS (ApS)

ApS TITLE:

Start date: End date:

Organization / NGO Entity/ies: (Mission/purpose of the cooperating institution)

Professor in charge:

Participating students:

Beneficiaries of the service: (description and number of participants)

NEED:

Description of the need, assistance, improvement, etc..:

LEARNINGS:

Specific: (how the action is linked to the subject/degree/qualification)

Transversal:

OBJECTIVES AND METHODOLOGY:

Service objectives:

Description of the activity to be performed: (development of the activity)

Methodology of the activity: (how the service will be developed in practice)

PROGRAMMING OF THE ACTIVITY:

Timeline of project phases, session planning:

MATERIALS AND RESOURCES:

Place of service:

materials and resources needed:

RESULTS:

Evidence: (What has been achieved, who will benefit from the activity and in what way)

Evaluation: analysis of objectives, etc.

GRAPHICAL EVIDENCE

Images of the process, results, links to videos, etc. that help to visually understand the experience.

3.1. RED ESPAÑOLA ApS MODEL: SHEET/REGISTER OF SERVICE-LEARNING PROJECT (ApS)

red española
aprendizaje-servicio

Esquema de diseño de un proyecto ApS

Ficha técnica	
Nombre del proyecto	
Centro o entidad responsable	
Chicos y chicas participantes	
Materias o ámbitos del proyecto	
Entidades colaboradoras	
Personas destinatarias	

Planteamiento del proyecto		
Aspecto a definir	**Preguntas orientativas**	**Rellena esta columna con tu propio proyecto**
Sinopsis del proyecto	¿Puedes describir en pocas líneas de qué va el proyecto de manera que se entienda a la primera?	Ejemplo: Desde las materias de Lengua y de Valores Éticos los chicos y chicas ofrecerán compañía y estímulo a personas mayores de la Residencia Río Vero, dinamizando con ellas talleres de memoria al tiempo que reforzarán sus competencias comunicativas y sociales.
Problema social del entorno que se trabajará	¿Cuál es el problema o necesidad social sobre el cual van a trabajar los chicos y chicas?	Ejemplo: El aislamiento social y emocional de las personas mayores en las residencias y la necesidad de frenar su deterioro cognitivo.
El servicio solidario	¿Cuál es la acción de servicio que van a realizar los chicos y chicas?	Ejemplo: Organizar y llevar a cabo talleres de memoria y actividades lúdicas para acompañar a las personas mayores y aliviar su soledad.

Vinculación con los ODS	¿Con que Objetivos de Desarrollo Sostenible se	Ejemplo: • Objetivo 4: Educación de calidad. • Objetivo 10. Reducción de las desigualdades. • Objetivo 17: Alianzas para lograr los objetivos.

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	vincula este proyecto?	
Necesidades educativas de los chicos y chicas	¿Qué características tienen los chicos y chicas y qué necesitan mejorar?	Ejemplo: Conflictos de convivencia en el aula; actitudes poco respetuosas hacia las personas mayores; pocas habilidades comunicativas...
Objetivos educativos y/o competencias que se trabajarán	¿Cuáles son los aprendizajes-clave que pueden fortalecer con este proyecto? Señalar aquellos que van a ser más relevantes en el proyecto.	Ejemplo: ▪ Conocimiento sobre el envejecimiento y las respuestas del Estado del Bienestar. ▪ Reflexión acerca de la soledad y el edadismo. ▪ Habilidades comunicativas, buenas maneras y buen trato hacia las personas mayores. ▪ Habilidades organizativas en el desarrollo de los talleres.
Actividades	¿Cuáles son las actividades que los chicos y chicas desarrollan en este servicio? Señalar las de dentro y las de fuera del aula. Indicar los aspectos metodológicos clave	Ejemplo de actividades dentro del centro educativo: ▪ Visita por parte de Servicios Sociales para plantear el problema de la soledad. ▪ Aprendizaje y práctica de actividades para estimular la memoria. ▪ Selección de actividades y preparación de los talleres de memoria. ▪ Reflexión individual acerca de las competencias a ejercer en el servicio. ▪ Evaluación del servicio una vez finalizado con la participación de los responsables de la residencia. Ejemplo de actividades fuera del centro educativo: ▪ Realización de los talleres en la residencia. ▪ Grabación de un vídeo sobre los talleres. ▪ Celebración de clausura de los talleres con las personas mayores.
Calendario de actividades	¿Cuándo se ejecutarán las acciones diseñadas?	Incorporar un calendario esquemático.
Protagonismo de los chicos y chicas	¿Cómo vamos a fomentar que los chicos y chicas se apropien del proyecto?	Ejemplo: ▪ Firma de un compromiso individual. ▪ Toma de decisión sobre el nombre del proyecto, sobre la organización y distribución de tareas. ▪ Reparto de responsabilidades individuales y grupales...

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Trabajo en red	¿Cuál será la participación de las colaboradoras?	Ejemplo: Residencia Río Vero: Aportación de las personas mayores; cesión de su sede para los talleres; asesoramiento y supervisión del servicio llevado a cabo por los chicos y chicas. Servicios Sociales del Ayuntamiento: Participación en el planteamiento del problema a trabajar.
Celebración	¿Cómo vamos a celebrar el proyecto?	Ejemplo: Merienda conjunta con las personas mayores en la Residencia, a modo de clausura de los talleres, incorporando intervenciones de todos los participantes e intercambio de recuerdos sobre la actividad y la relación intergeneracional establecida.
Difusión	¿Cómo vamos a difundir el proyecto?	Ejemplo: - Invitación a la prensa local para que acompañe el proyecto y relate la clausura. - Registro de un breve vídeo y difusión en RRSS. - Habilitación de un espacio en la web del centro educativo…
Recursos	¿Qué se necesita para realizar las actividades propuestas?	Ejemplo de recursos necesarios: - Recursos económicos: Presupuesto de gastos y viabilidad del proyecto (transporte, materiales…). - Recursos humanos: apoyo de personal voluntario o de profesionales… - Recursos organizativos: autorizaciones o permisos, reparto de responsabilidades.
Evaluación	¿Cómo se va a evaluar el proyecto? Señalar cómo evaluaremos las competencias perseguidas y cómo evaluaremos el servicio realizado.	Ejemplos: - Cuestionario de autoevaluación sobre los objetivos de aprendizaje que se perseguían. - Cuestionario para recoger la valoración de la residencia sobre el desempeño de los chicos y chicas.

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