



Utilizing Diversified Teaching Strategies to Enhance Nurses Learning Effectiveness in Oxygen Therapy Management and Care

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Background

Patients with pulmonary diseases often experience symptoms such as dyspnea, unstable saturations, and cyanosis. Oxygen therapy is a necessary treatment for many patients with dyspnea. Clinically, dyspnea symptoms can occur rapidly and urgently. If a nurse is unfamiliar with oxygen therapy equipment, there may be issues with incorrect assembly, improper procedures, or incorrect settings on the devices, as well as potential facial skin injuries. These issues can lead to complications and patient safety concerns. In the face of any emergency or abnormal situation, the nurse may easily become anxious and overwhelmed, which can increase frustration and stress.

Diverse teaching strategies (such as situational teaching, VR digital learning, etc.) can create a friendly learning environment, overcome teaching limitations, integrate real-world experiences, and create virtual 3D spaces. These approaches address the limitations of traditional learning environments and are expected to improve nurses' preparedness for disease management and confidence in facing clinical situations.

Current Situation

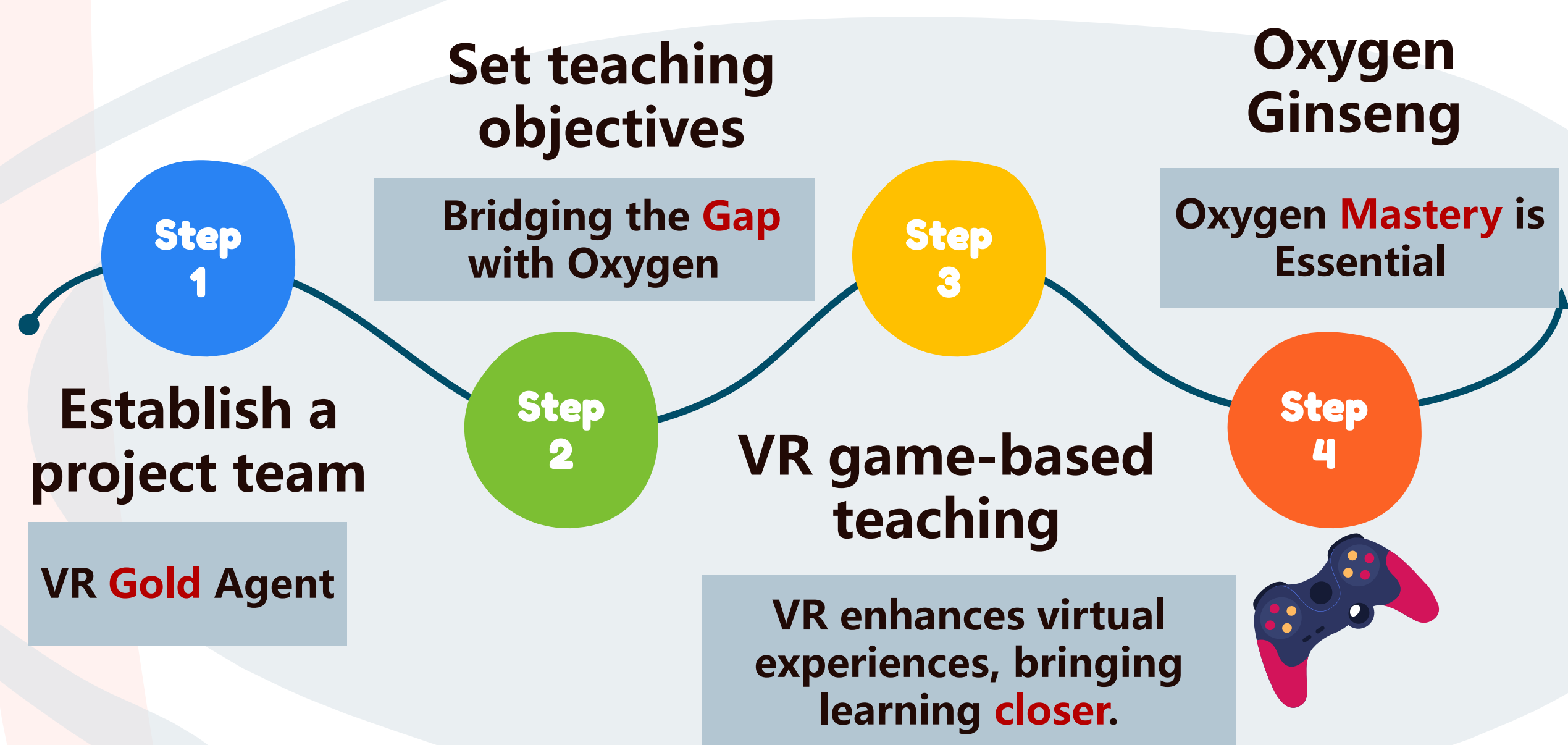
- ◆ **First:** The variety of oxygen equipment is diverse, teaching materials are scattered, and there is a lack of systematic learning materials.
- ◆ **Second:** Some oxygen equipment is difficult to obtain, and it is hard to learn without hands-on practice.
- ◆ **Third:** The assembly of equipment (BiPAP, NCHF, Venturi-mask) is prone to misconnection of tubing, cumbersome, and time-consuming.
- ◆ **Forth:** The incidence of facial pressure injuries caused by medical devices is high.

Method

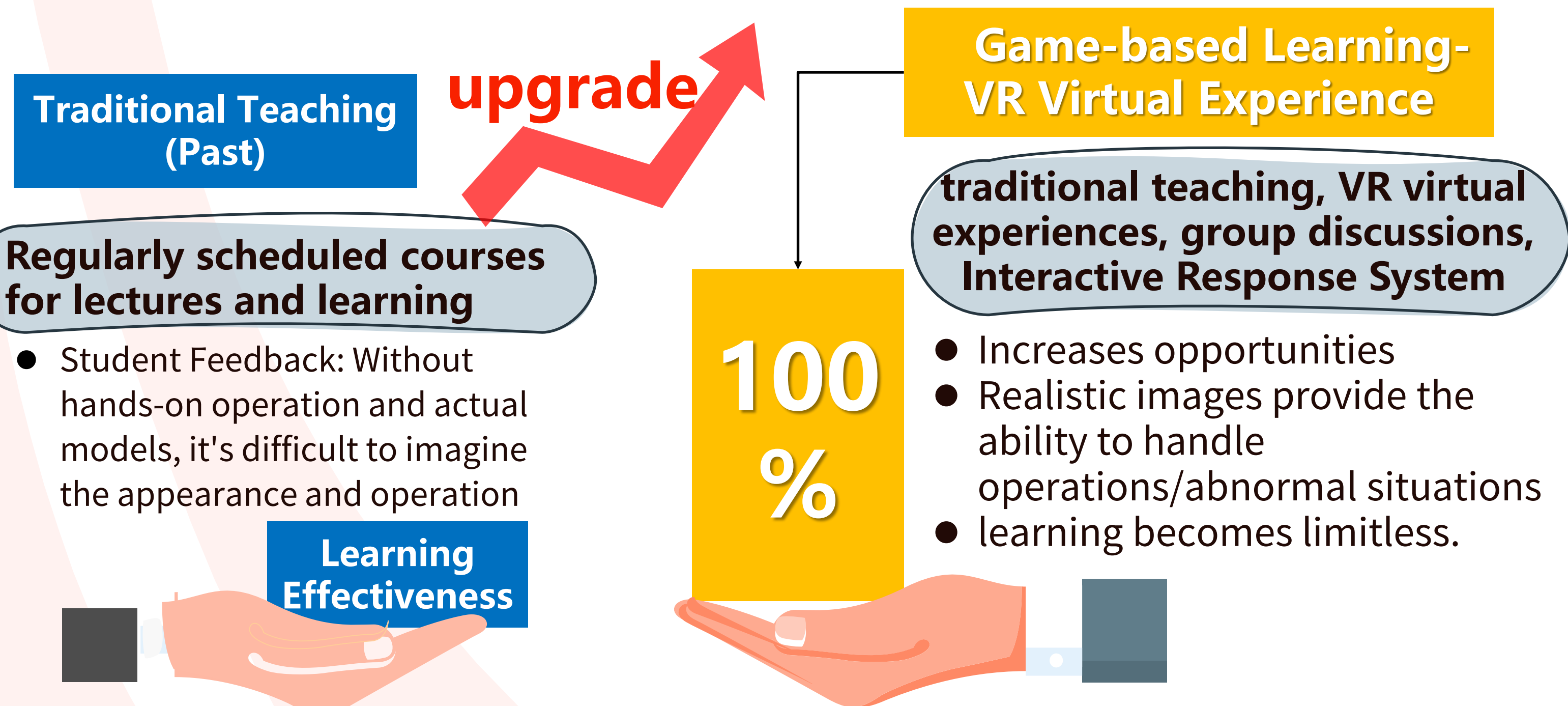
From Jan. to Jun. 2023, 13 new nurses were trained using VR-integrated oxygen therapy teaching materials including operational procedures and facial pressure injury prevention.

- ◆ **Teaching Target Audience:** Thoracic Medicine Ward NPGY Teaching
- ◆ **Objectives:**
 - **Knowledge:** Learners can correctly identify oxygen therapy equipment and skin care.
 - **Attitude:** Learners have the confidence to operate oxygen therapy equipment and provide skin care.
 - **Skills:** Learners can correctly perform procedures with oxygen therapy equipment and skin care.

Creative Ideas



strategic 1 : Using VR Virtual Reality Teaching Model



strategic 2 : Filming a Simulated Environment



Learning is like a battlefield
Learning on the battlefield

Using the ward as a learning environment to increase clinical handling ability and familiarity.

strategic 3 : Equipment/Care Teaching Materials

Multimedia Audio-Visual Teaching



Interactive Response System

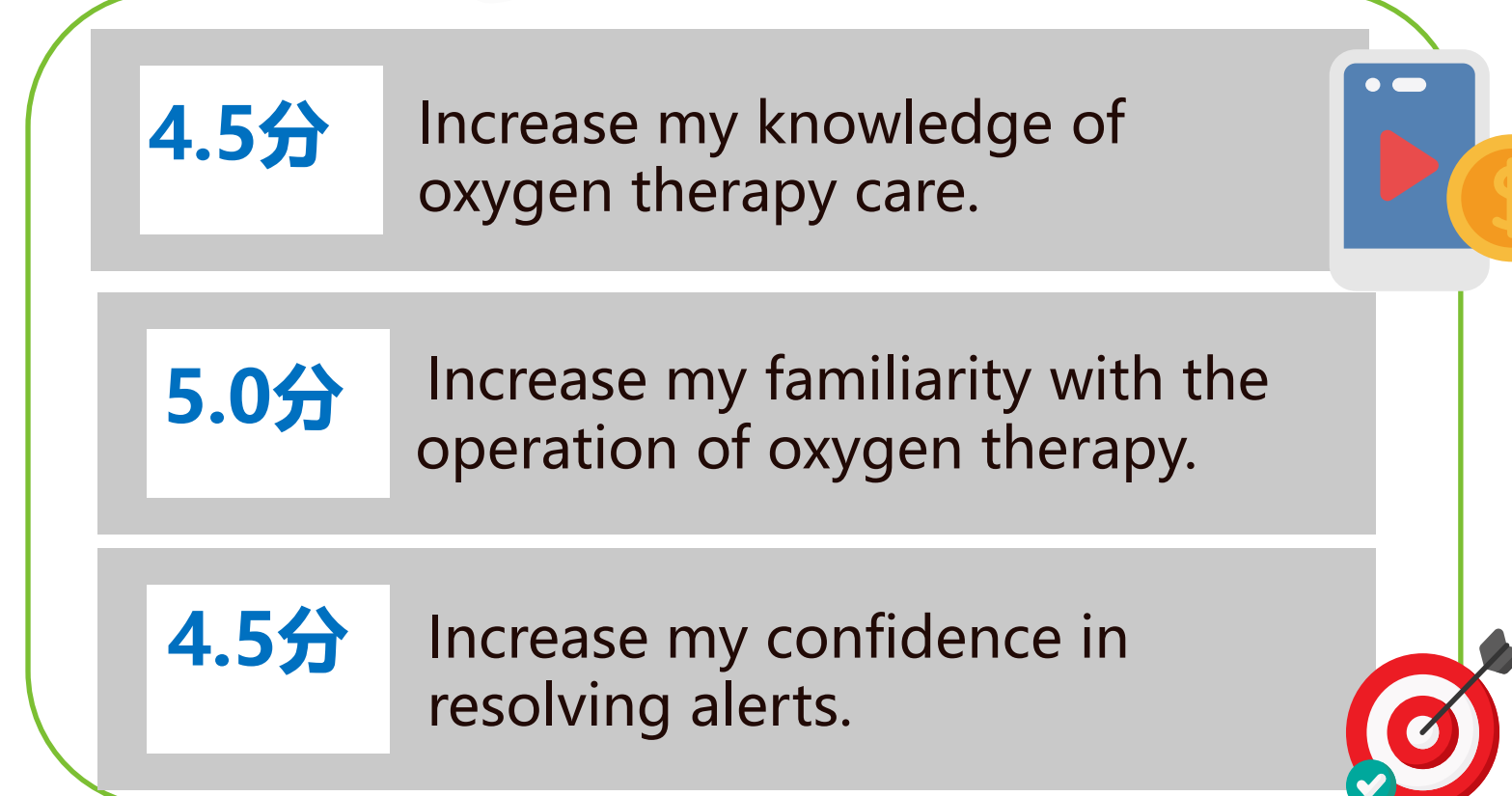


Result

We use the Kirkpatrick four levels to confirm learning effectiveness.

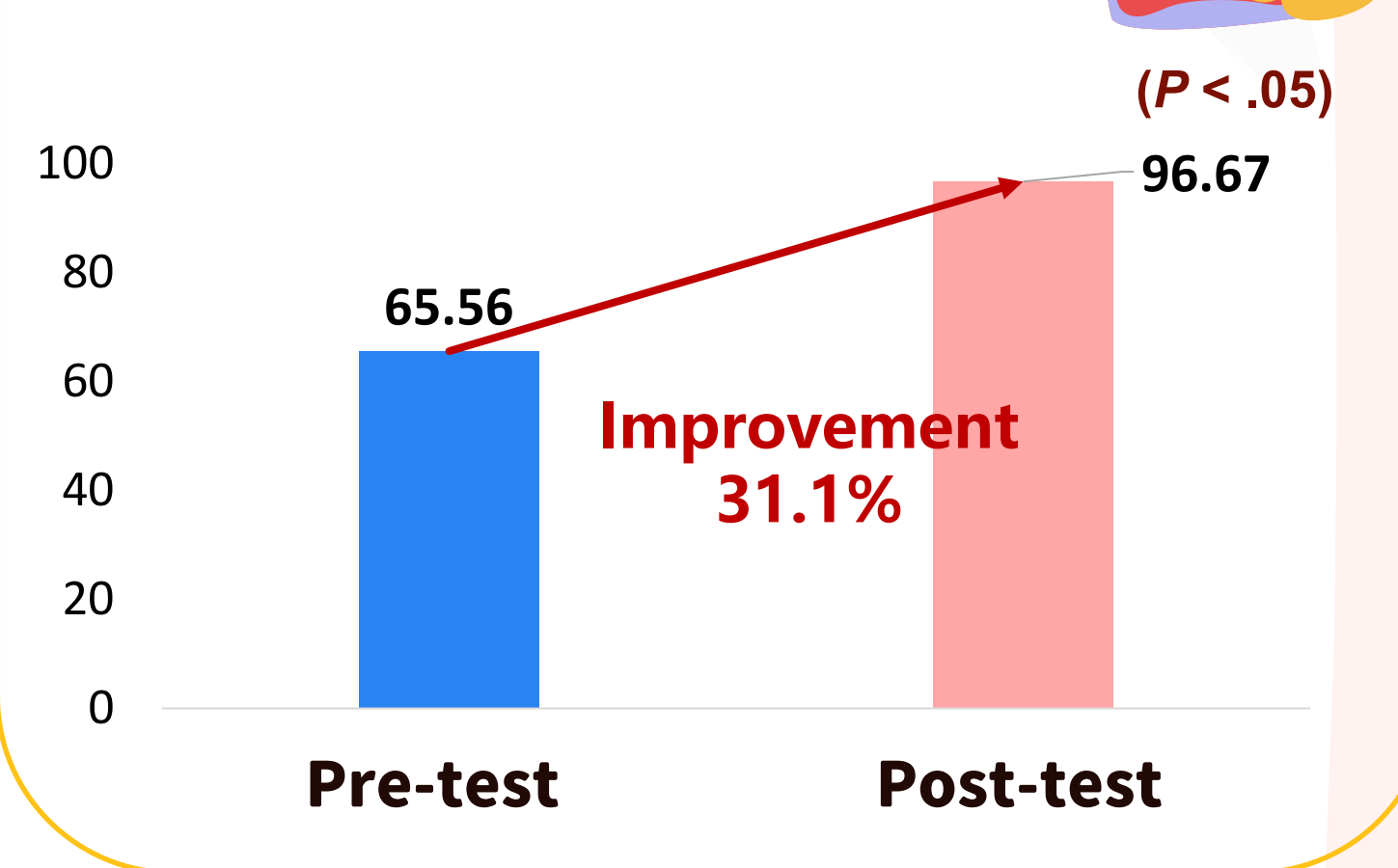
Kirkpatrick level I

- A total of 9 nurses participated, with an attendance rate of **100%**.
- Course satisfaction: **4.67** out of 5.



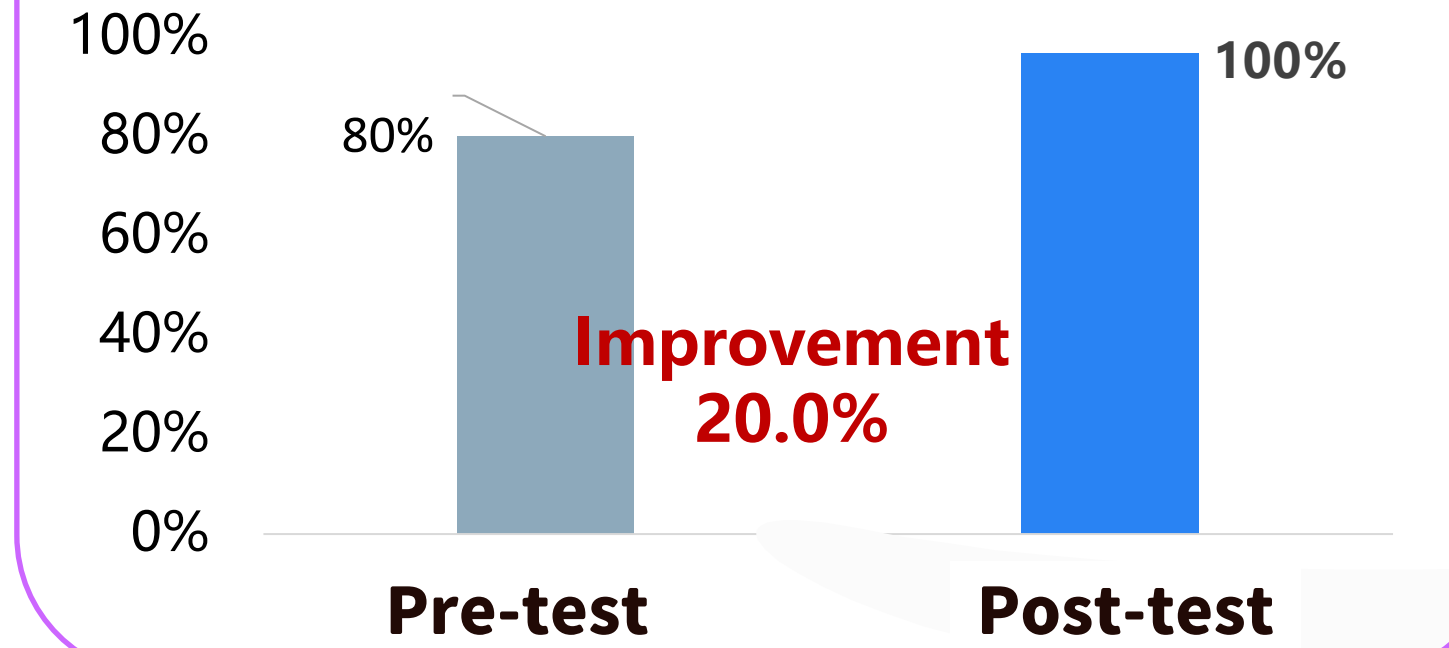
Kirkpatrick II

Knowledge Test



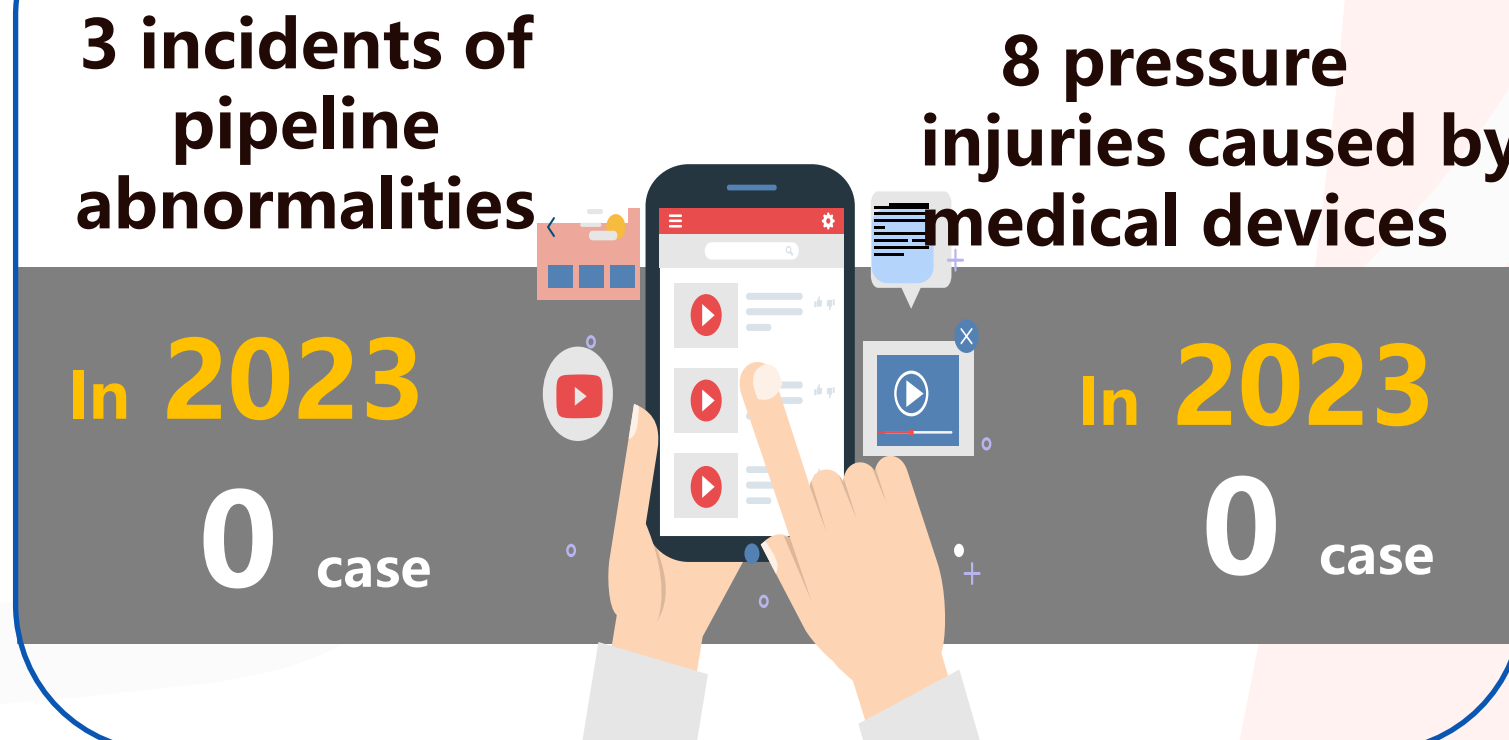
Kirkpatrick III

skill Test



Kirkpatrick IV

In 2021-2022



Discussions

The creation and adoption of VR teachings materials enhanced the teaching abilities and learning motivation of teachers and students, respectively. VR teaching materials are not restricted by time and space and can be extended to other professions

Advantages

- Easily accessible virtual teaching aids allow learning to extend beyond the classroom or workplace.
- Student feedback and reflection can help improve teaching directions, enhancing teachers' motivation and abilities.

Resistance

- Virtual teaching aids (VR glasses) are expensive and cannot be widely adopted by other units.
- It is difficult to timely capture the scene during emergency handling.

Suggestions and Applications

- The virtual interface can continuously collect user feedback, allowing for ongoing optimization of VR teaching materials.
- It can be parallelly extended to nursing students, medical students, and other nursing units.
- There are plans to increase clinical scenario team drills, making them more aligned with clinical practice and enhancing students' emergency response capabilities.