عمادة التعلم الإلكتروني والتعليم عن بعد
Deanship of E-learning and Distance Education

KFU
جامعة الملك فيصل
KING FAISAL UNIVERSITY
جـامعة ووطـن.. نمـاء.. واسـتدامة..

HoloTech Project Description

HoloTech Project

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Hologram Services

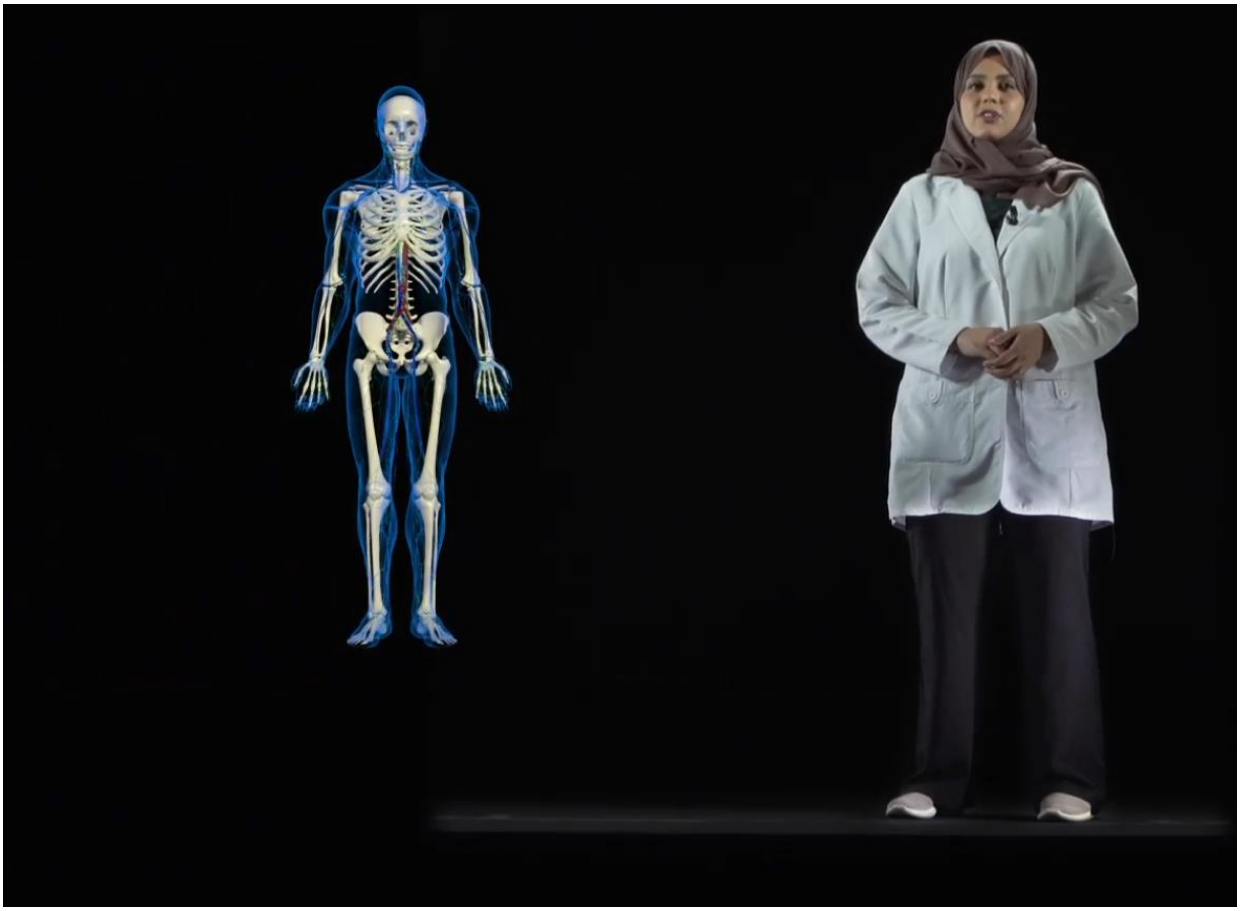
King Faisal University provides the stakeholders (faculty members - students - the local community) with holographic imaging services. The university is keen to contribute actively to achieving the goals of the Kingdom's Vision 2030 in the field of education, which is to provide an educational environment that stimulates creativity. As a result, these technical services keeping pace with the latest technological developments in the field of virtual reality have been provided. This technology is considered one of the emerging and modern technologies that the university has introduced into the educational services system and enriched it with techniques enhancing creativity and innovation. Holographic imaging technology is used as a new technology to display interactive educational content and elements of the educational process in a manner that simulates reality through advanced broadcast studios, halls equipped to receive holograms, and a specialized team at the university to serve the stakeholders and develop the content and elements of holograms. This technology achieves interactive learning and training, which is an applied and proactive approach to facilitate the learning process. It also improves the positive participation of learners and trainees in the learning process. In addition, it increases their motivation towards education and training and the impact of learning and training on the stakeholders. Employing this technology in education is one of the most important indications of digital transformation in the educational and training process. Moreover, it is an important indicator of integrating technology into the vocational education and training process, enhancing spending efficiency and rationalizing costs of attracting and benefiting from experts and specialists.

The Distinctive Elements and Characteristics of the Project Qualifying it to Compete and Win the Award

King Faisal University is considered the first leading university locally and in the Middle East in the field of adopting holographic imaging techniques (hologram) in the educational and training process and providing the services of this modern technology to the stakeholders. Through this technology, the university works to find appropriate technical solutions that cover teaching practical and field aspects of the educational process .These technical solutions also provide field training in a creative, interactive way, as well as enriching the educational process with interaction, creativity, and innovation in providing knowledge content to the stakeholders.

This service also provides facilitation of the procedures for seeking the assistance of experts and specialists in the field of education and training locally and internationally through this technology. Virtual presence using hologram techniques for experts and specialists is provided by using this technology. This technology also provides the full interactive educational and training process with all its activities with the stakeholders without the need for the usual presence at the university.

In order to provide the successful management of hologram services, the university provides technicians and specialists in the management of hologram studios and halls. Those technicians and specialists have had a role in developing innovative solutions that were not found in this technology, and this will be presented later in project management and creative solutions. The university also implements services for the production, development and design of educational and training elements, and units using hologram technology, which simulates reality and enhances the educational and training process at the university.



The Situation before the Project and How the Project Contributed to Bridge the Gaps...

The hologram project contributed to providing services and new creative methods for digital transformation and digital services. The use of holographic imaging services came to bridge the educational and training gap, especially in practical and field aspects. This technology was also used to bridge the gap in teaching practical field aspects during Corona pandemic. At the university, services for the production and development of a set of educational and training elements and units are implemented using hologram technology that simulates reality and enhances it with elements of innovation and interaction, contributing to the transfer of direct and realistic experiences to learners and trainees.

Previously, the teaching of practical subjects in the medical, engineering, and scientific fields was limited to the theoretical side, using some pictures, fixed drawings, and video clips. In addition to this, some students have been attending some lectures in laboratories in the event that the requirements and equipment were available or practical and field training in the entities related to these fields. The use of this technology has been shortened by providing educational and training experiences in the field and in an interactive process that simulates reality.

The most important challenges for implementing this project were the lack of previous experiences of using this technology in the educational process, and it was limited to the recreational sectors. This made the university rely on its expertise to:

1. Design halls for receiving holograms and broadcasting studios with all their technical equipment.

2 . Develop a model for activating this service in the educational and training process in its digital environment.

3. Design and prepare hologram elements (educational and training).

4. Be creative in preparing new transmission and reception mechanisms using stereoscopic imaging technology.

5. Be creative in designing and equipping mobile broadcasting studios.

6. Be creative in designing and equipping mobile hologram reception halls.

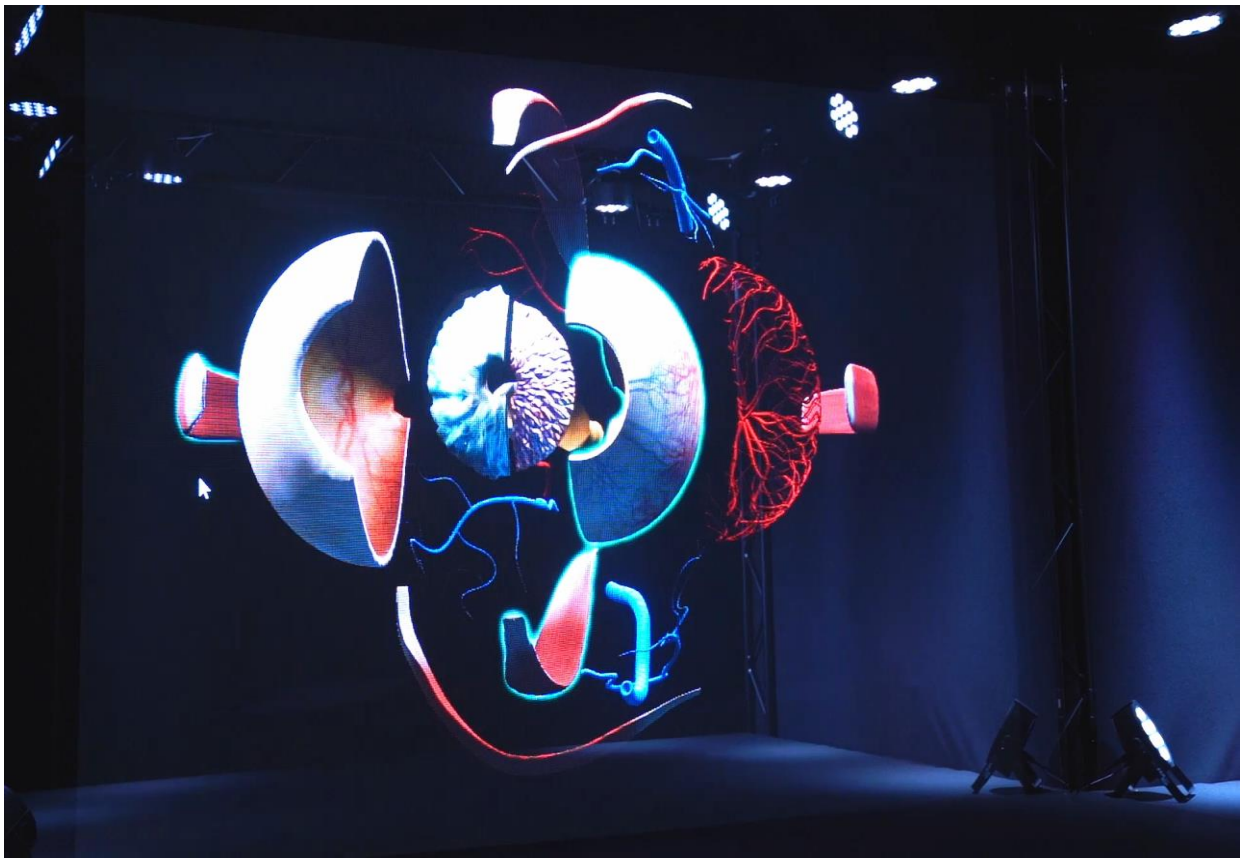
Has the Project Previously Won One of the Specialized Awards at the Local, Regional and International Levels?

King Faisal University won the King Abdul-Aziz Quality Award in the fifth session 1442 AH - 2020 AD. This award was under the category of government higher education at the bronze level; including verification of the technology and knowledge management standard, and this award has included innovation and creativity in the use of technologies to support the digital transformation system at the university. This is considered a possible and a major supporter of the technology used in the project.

Is the Project Related to the Entity's Digital Transformation Plan? How Compatible is it with the Pillars of Digital Transformation?

According to the university's strategic plan 2020-2024, the project is linked with the university's digital transformation strategy since it supports the strategic priorities.

These strategic priorities provide for the establishment and maturation of the university's innovation and business development system, enhance its economic capabilities, and are one of the outcomes of the continuing education system development program, which supports the roadmap of digital transformation projects. The project also supports the strategic objective of the continuous development of the university education system and the focus of the university's community partnership activities towards the areas of mutual enrichment. In addition, the project is considered compatible with the stages of digital transformation approved by the university, which are (discovery - vision - decision-making - determining the delivery strategy - implementation strategy).



How Was the Project Managed?

The university, through the Deanship of E-Learning and Distance Education and the Deanship of Information Technology, has provided the requirements for the successful operation and management of holographic imaging services. The university provides technicians and specialists in the management and operation of hologram studios and halls, who have developed their expertise in this technology to reach advanced stages, as they have had a role in developing innovative solutions that were not found in this technology before.

The services of producing, developing, and designing of educational and training elements and units using hologram technology are also implemented at the university by technicians in accordance with the requirements of the stakeholders of the service. In addition, the Deanship of E-Learning and Distance Education provides digital platforms to receive service requests and multiple channels to provide technical support and receive development comments and suggestions (digital platforms - social media tools), which serve significantly to improve, enrich, and enhance the educational and training process with this technology at the university. The following are the phases of project implementation and management:

1. Developing digital content using virtual reality and 3D technologies.
2. Developing educational elements (engineering and medical elements) using three-dimensional techniques and displaying them on small personal hologram screens prepared for this purpose.
3. Designing hologram halls and equipping them with technical devices and technical infrastructure necessary to receive broadcasts using hologram techniques. Designing broadcast studios and equipping them with the necessary technologies for broadcasting and recording hologram.
4. Developing digital content and designing the depiction of the elements of the educational process using hologram technique.
5. Launching and developing the hologram project.

6. Starting activating the hologram technology in the field of training and education and the operational phase at the university.

What Are the Creative Aspects of the Project?

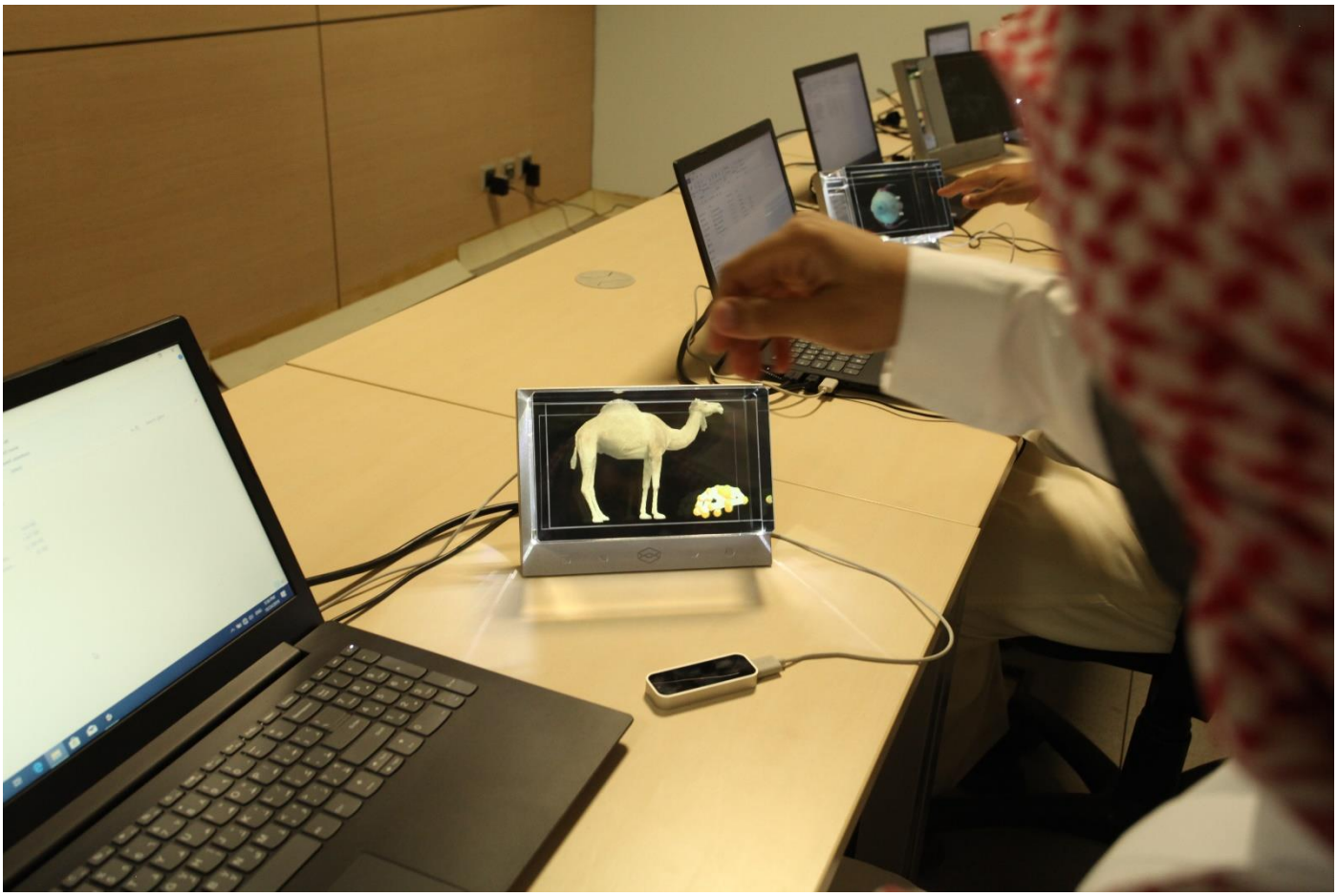
Hologram technology offers innovative and non-traditional solutions in bridging the educational and training gaps at the university. The creative aspects of the project are represented to reduce expenses for providing educational materials and laboratories. Moreover, hologram technology has contributed to reducing training costs by reducing the cost of travel, transportation and accommodation to attend training courses in other cities and attracting local and international experts and specialists. Hologram elements and three-dimensional objects are developed within the university without the help of third parties, and the university seeks to improve self-resources by using hologram studios and halls, and the provision of these emerging technical services to the private sector and the local community in the areas of hosting conferences and holding training courses remotely, This does not affect the educational activities and services of the university. Due to the lack of previous experiences of using such techniques in the educational process, it was limited to the recreational sectors. This made the university rely on its experiences in finding and innovating creative solutions to operate this project and make optimum use of the services provided by holographic imaging technology. Among these creative and innovative solutions are the following:

1. Designing halls for receiving holograms and broadcasting studios with all their technical equipment.
2. Developing a model for activating this service in the educational and training process in its digital environment.
3. Designing and preparing hologram elements (educational and training).
4. Be creative in creating new transmission and reception mechanisms using stereoscopic imaging technology.
5. Be creative in designing and equipping mobile broadcasting studios.
6. Be creative in designing and equipping mobile hologram reception halls.

What Are the Technologies Used?

The following techniques have been used in the development and processing of hologram services:

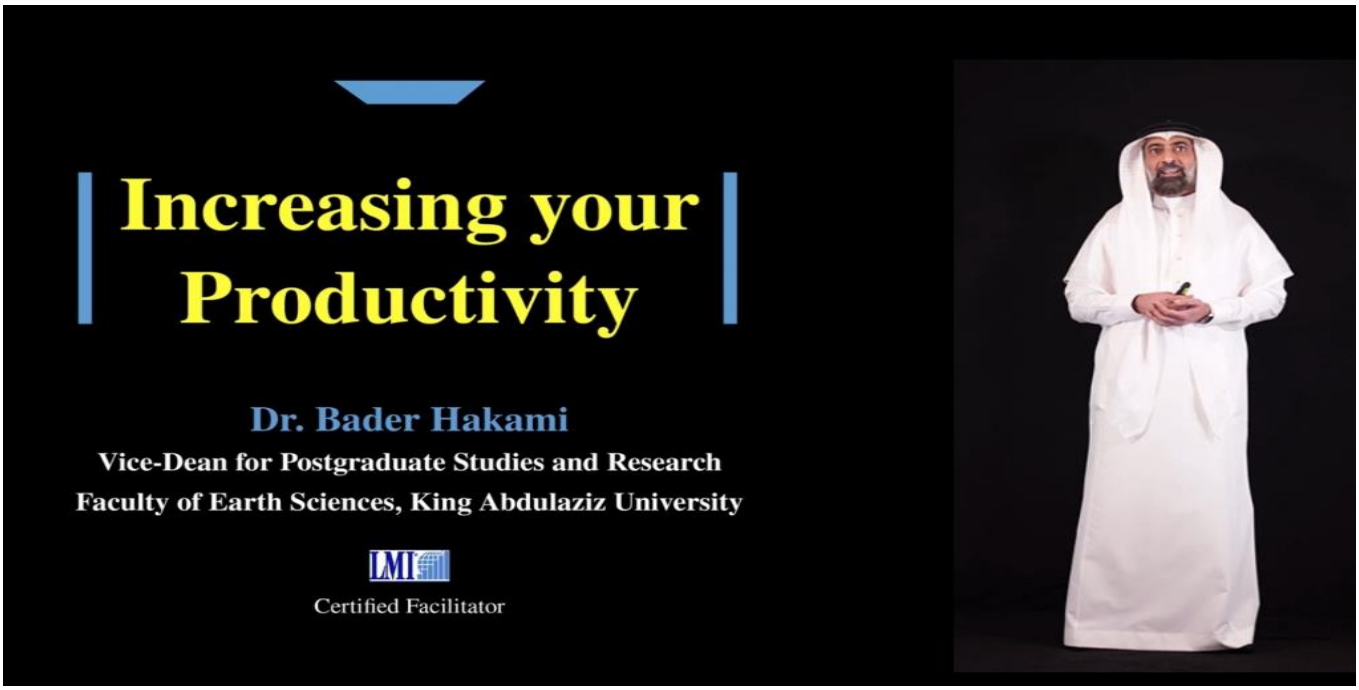
- Hologram technology
- Virtual Reality Technology



The Effects of Using Hologram Technology

As for the effect of using hologram technology:

1. It increases interaction between learners/trainees and faculty members /trainers.
2. It develops the scientific thinking skills of the students/trainees.
3. Increasing the motivation towards learning/training among students/trainees.
4. It maximizes the benefit from the expertise of faculty members in the educational process.
5. It maximizes the benefit from the expertise of the university's faculty members and specialized experts from local and international institutions in the training process.
6. It reduces training expenses and saves money from the costs of practical training, laboratories and simulation applications.



The Extent of the University's Interest in the Governance and Protection of the Technical Environment of the Project

The university has obtained the accreditation certificate for the ISO system in business continuity, as well as the ISO certificate for the information security management system. In addition, it has achieved an external audit rate of 88.99% for the application of basic cybersecurity controls in order to protect the technical environment of the project. It has also established the Department of Risk Management and Business Continuity, which is directly linked to the first official, and the organizational guide for enterprise risk management was approved in accordance with the ISO system in risk management. Moreover, it has applied risk management methodology in digital transformation projects, digital services and cybersecurity projects and adopted a governance framework and digital transformation processes. Recently it has established the permanent committee for digital transformation at the university, as well as roles, responsibilities, indicators of performance measurement and decision-making, change management procedures, and project management methodologies and institutional structure.

The Means of Receiving Stakeholders' Comments and Complaints

- Digital platforms and portal.

- Social Media

The Impact of the Project on the Behavior of Users and their Moving to Digital Services

1. Enhancing trust among learners/trainees.

2. Stimulating creativity and innovation among learners/trainees

3. Increasing interaction between learners/trainees and faculty members/trainers.

4. Developing scientific thinking skills of students/trainees.

5. Increasing the motivation towards learning/training among students/trainees.

6. Maximizing the utilization of the expertise of the faculty members in the educational process.

7. Maximizing the benefit from the expertise of the university's faculty members and specialized experts from local and international institutions in the training process.

8. Reducing training expenses and rationalizing the costs of practical training, laboratories and simulation applications.

The Number of Stakeholders of the Project and How their Needs are being Met from a Technical Point of View

Hologram technology at the Deanship of E-Learning and Distance Education serves all university staff and students (students - faculty members - employees) and the local community in two areas:

• Field of training: 1670

• Education Field:

- Students: 53,587

- Faculty members: 1,774

The Deanship of E-Learning and Distance Education provides digital platforms to receive service requests and multiple channels to provide technical support and receive development feedback and suggestions (digital platforms - social media tools).

Global models and international standards were used to implement this project and provide its services to users by:

• Using the ADDIE model to analyze and design the educational material and then subject it to the stages of development, implementation, review, and users' evaluation.

• Using of Quality Matter Model (QM) standards for substantive and technical review of educational software, simulation elements, and 3D graphics that have been developed to be used in hologram technology.

• Following the UDL guidelines in designing educational situations during teaching according to hologram technology.

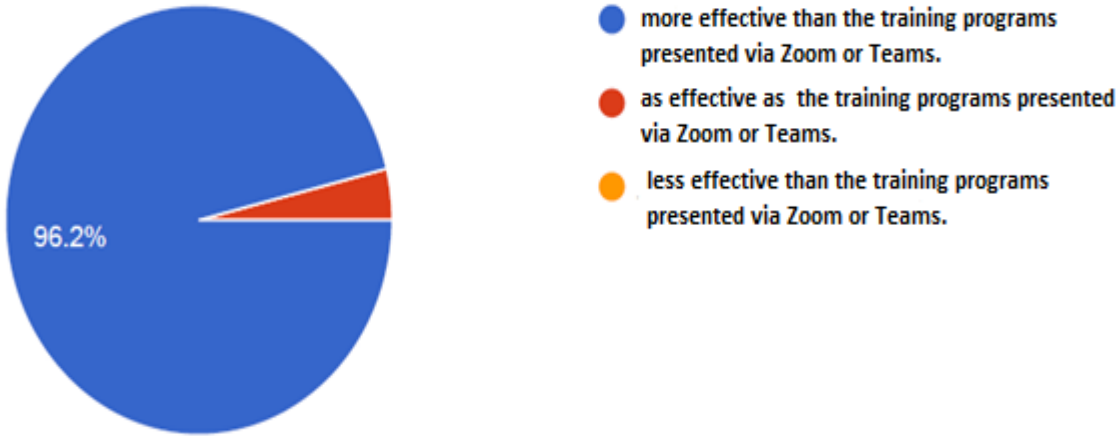
A Sample of a Survey of the Stakeholders' Opinions on the Effectiveness of a HoloTech Project in Training

After attending the training program in the special studios of Hologram Technology, the training programs presented using Hologram Technology is:

1126 responses

After I attended the training program in the special studios of Hologram technology, the training programs presented by the Hologram technology are:

1126 responses



A Survey of Stakeholders' Satisfaction with the Services Provided in the HoloTech Project