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Assessment Criteria for Developing Students' Professional Training Through Virtual Laboratories

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Abstract: This article is dedicated to the assessment criteria for developing students' professional training through virtual laboratories. Virtual laboratories provide students with the opportunity to conduct practical experiments, develop technical and professional skills, and enhance their learning experience in the modern educational process.

The article analyzes the assessment criteria for practical knowledge acquired by students through virtual laboratories, innovative approaches, decision-making speed, analytical thinking, and teamwork skills. It discusses how the application of virtual laboratories can help students achieve effective results in professional training. This article aims to develop scientific conclusions regarding the role of virtual laboratories in education and their assessment criteria.

Keywords: Virtual laboratories, students, professional training, assessment criteria, practical skills, innovative approach, analytical thinking, teamwork, educational technologies, professional competence.

Introduction: Nowadays, the education system is adopting new approaches that integrate digital technologies. In particular, virtual laboratories play a crucial role in enhancing students' professional training. They allow students to gain real-world experience, reinforce their practical knowledge, and provide a range of opportunities focused on developing professional competencies. This article examines the assessment criteria for developing students' professional training through virtual laboratories.

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Virtual Laboratories: Definition and Importance

A virtual laboratory is a simulation process conducted via a computer or the internet. It enables students and educators to perform various practical experiments and scientific research in a safe and efficient manner. Virtual laboratories have emerged as an innovation in education, primarily aimed at implementing innovative methods for teaching practical skills. These technologies offer convenience for students and encourage them to engage more interactively and actively compared to physical laboratories.

The Role of Virtual Laboratories in Professional Training

In the process of professional training, students need to acquire not only theoretical knowledge but also practical skills. Virtual laboratories serve as an essential tool for developing these practical skills. Through them, students can:

• Develop technical skills: Learn to operate laboratory equipment and use various software applications.

• Enhance creative and critical thinking: Virtual laboratories allow students to experiment with different scenarios, identify errors, and analyze results, fostering their creativity.

• Improve problem-solving skills: Students learn to apply their knowledge to resolve issues encountered during virtual experiments.

• Engage in teamwork: Virtual laboratories provide opportunities for collaborative work, preparing students for professional environments where teamwork is essential.

Assessment Criteria for Professional Training in Virtual Laboratories

There are several key criteria for assessing professional training through virtual laboratories. The main assessment criteria include:

• Mastery of practical knowledge and skills: Students are evaluated based on their ability to successfully complete practical tasks in their field of study. This includes completing virtual laboratory assignments, analyzing data, and finding solutions to problems.

Application of Innovative Approach

The student's level of applying new technologies and innovative methods in practical work. This criterion reflects the effectiveness and inclusion of modern technologies in the virtual laboratory.

Making Quick and Accurate Decisions

The student's ability to make decisions and identify

errors. Virtual laboratories require students to make quick and accurate decisions, which tests their practical knowledge.

Analytical Thinking and Data Processing

The ability to analyze results obtained in virtual laboratories, process data, and draw correct conclusions. The way a student processes information and approaches results analytically is an important factor in assessing their professional preparedness.

Communication and Teamwork Skills

In virtual laboratories, students learn to work collaboratively. The ability to communicate effectively with team members, exchange ideas, and achieve a common goal is also assessed.

CONCLUSION

Virtual laboratories are an essential tool in the learning process, contributing to the development of students' professional training and enhancing their practical skills. Through them, students develop technical, creative, analytical, and teamwork skills. The assessment criteria help determine the effectiveness of the skills taught through virtual laboratories, evaluate the quality of students' practical knowledge in their subjects, and identify the innovative approaches they use. Furthermore, these criteria play a crucial role in improving the educational process and preparing students for professional activities.

REFERENCES

Gagné, R. M., & Briggs, L. J. (1974). Principles of Instructional Design.

Hughes, J. L. (2014). The Role of Virtual Labs in Developing Critical Thinking Skills in Students. Journal of Educational Technology & Society, 17(4), 34-45.

Benassi, V. A., & Hackathorn, J. D. (2015). Using Virtual Labs to Enhance Learning in Science and Engineering. Educational Technology Research and Development, 63(6), 1003-1020.

Wright, A., & Furse, S. (2016). Virtual Laboratories in Engineering Education: An Effective Tool for Enhancing Professional Skills. International Journal of Engineering Education, 32(4), 1085-1096.

Sung, E., & Choi, J. (2019). Evaluating the Effectiveness of Virtual Laboratories in Improving Learning Outcomes. Journal of Educational Computing Research, 57(3), 535-553.

Anderson, C., & Spector, J. M. (2013). A Framework for Evaluating Virtual Learning Environments in Professional Education. Journal of Educational Technology Development and Exchange, 6(1), 67-79.

Zheng, B., & Lin, C. H. (2017). The Impact of Virtual Labs

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on Student Engagement and Learning Performance in STEM Education. Computers & Education, 109, 66-77.

Boulos, M. N. K., & Maramba, I. (2007). Virtual and Remote Laboratories in Higher Education: A Review of the Literature. British Journal of Educational Technology, 38(5), 819-836.

Jones, P., & Smith, R. (2014). Assessing Professional Skills Development through Virtual Laboratories. Journal of Engineering Education, 103(2), 185-195.

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