BUKTI SEBAGAI REVIEWER JURNAL INTERNASIONAL BEREPUTASI

Nama Jurnal	:	*International Journal of Information and Education Technology*
Link Scopus	:	https://www.scopus.com/sourceid/21100921050
Link Scimagojr	:	https://www.scimagojr.com/journalsearch.php?q=21100921050&tip=sid&clean=0 (Scopus Q3)
Judul Artikel yang direview:	:	*Digitalization of Education: Opportunities of Modern Digital Educational Resources and Their Impact on Students' Analytical Thinking*
Bulan, Tahun Artikel yang direview	:	Januari 2024 (1st *Round*) Maret 2024 (2nd *Round*)

ROUND 1

UIRmail

Sri Wahyuni <wahyunis@edu.uir.ac.id>

[ijiet] Manuscript ID: IJIET-12216 - Review Request

Ms. Jennifer Zeng <jennifer.zeng@ejournal.net> Mon, Jan 22, 2024 at 11:16 AM
To: Sri Wahyuni <wahyunis@edu.uir.ac.id>

Dear Sri Wahyuni:

We have received the following manuscript to be considered for publication in International Journal of Information and Education Technology (http://www.ijiet.org/) and kindly invite you to provide a review to evaluate its suitability for publication:

Manuscript ID: IJIET-12216
Title: Digitalization of Education: Opportunities of Modern Digital Educational Resources and Their Impact on Students' Analytical Thinking
Submission URL: https://ojs.ejournal.net/index.php/ijiet/reviewer/submission?submissionId=12216&reviewId=61039&key=t8mZ6puw

The submission's abstract is inserted below. Please click on the link above to access the manuscript, and inform us whether or not you will be able to provide a review.

If you agree to review this manuscript, please log into the submission system and click "agree", and then you can access the manuscript and report form. In our effort to make our reviewing process as quick and efficient as possible, we would ask you to return your report within **TWO WEEKS**, but please let me know if you could review but would need longer than this.

If you are not able to review this manuscript, we kindly ask you to decline by clicking on the above link so that we can continue processing this submission. We would also appreciate any suggestions for alternative expert reviewers.

Our expert reviewers are crucial in helping maintain our high standards and we would like to thank you in advance for any help you can provide.

Thank you for considering this request.

Ms. Jennifer Zeng
jennifer.zeng@ejournal.net

Title: "Digitalization of Education: Opportunities of Modern Digital Educational Resources and Their Impact on Students' Analytical Thinking"

Abstract:

This research aimed to assess how virtual reality technology influences students' analytical thinking skills. The study sample consisted of 436 third-year students from the Philological Faculty enrolled in the full-time program. The sample was divided into two groups: Group 1 (228 participants) consisted of students who studied the course "Philosophy of Social Sciences and Humanities" using traditional teaching methods, without the use of virtual reality technology. Group 2 (208 students) utilized virtual reality technology in their instruction. Research methods included an online survey of students and content analysis of the collected data. As a result of the study, it was determined that students in the group utilizing virtual reality technology reported a statistically significant 5% higher level of analytical thinking. Additionally, they were found to use trigonometry and statistics 6% more frequently, employ computer technologies 4% more often, exhibit 5% less hesitancy, make decisions 6% faster, enhance their planning skills by 6%, make 2% fewer errors, and excel by 8% in finding solutions to seemingly intractable situations when compared to the traditional educational format. These outcomes are linked to the development of a higher level of analytical thinking (a 9.97% increase) compared to the education format. Academic results among students in the studied groups did not differ significantly ($p > 0.05$), with an average score of 3.84±0.69 and 4.14±0.49, respectively. There was a 7.81% increase in the average score in the VR-technology group. The results of this conducted research demonstrate the positive impact of educational digitalization.

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International Journal of Information and Education Technology
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ROUND 2

UIRmail

Sri Wahyuni <wahyunis@edu.uir.ac.id>

[ijiet] Manuscript ID: IJIET-12216 - Revised Version Review Request

Ms. Jennifer Zeng <jennifer.zeng@ejournal.net> Fri, Mar 1, 2024 at 9:09 PM
To: Wahyuni Sri <wahyunis@edu.uir.ac.id>

Dear Wahyuni Sri,

This regards the manuscript "Digitalization of Education: Possibilities of Educational Resources based on Virtual Reality and Their Impact on the Development of Analytical Thinking of Students," which is under consideration by International Journal of Information and Education Technology.

Following the review of the previous version of the manuscript, the authors have now submitted a revised version of their paper. We would appreciate it if you could help evaluate it.

Please log in to the journal website by 2024-03-04 to indicate whether you will undertake the review or not, as well as to access the submission and to record your review and recommendation.

The review itself is due 2024-03-09.

Submission URL: https://ojs.ejournal.net/index.php/ijiet/reviewer/submission?submissionId=12216&reviewId=65566&key=kGGare

Thank you for considering this request.

Ms. Jennifer Zeng
jennifer.zeng@ejournal.net

Title: "Digitalization of Education: Possibilities of Educational Resources based on Virtual Reality and Their Impact on the Development of Analytical Thinking of Students"

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Review:Digitalization of Education: Possibilities of VR-Based Educational Resources and Their Impact on the Development of Analytical Thinking of Students

Request for Review

You have been selected as a potential reviewer of the following submission. Below is an overview of the submission, as well as the timeline for this review. We hope that you are able to participate.

Article Title

Digitalization of Education: Possibilities of VR-Based Educational Resources and Their Impact on the Development of Analytical Thinking of Students

Abstract

This research aimed to assess how virtual reality technology influences students' analytical thinking skills. The study sample consisted of 436 third-year students from the Philological Faculty enrolled in the full-time program. The sample was divided into two groups: Group 1 (228 participants) consisted of students who studied the course "Philosophy of Social Sciences and Humanities" using traditional teaching methods, without the use of virtual reality technology. Group 2 (208 students) utilized virtual reality technology in their instruction. Research methods included an online survey of students and content analysis of the collected data. As a result of the study, it was determined that students in the group utilizing virtual reality technology reported a statistically significant 5% higher level of analytical thinking. Additionally, they were found to use trigonometry and statistics 6% more frequently, employ computer technologies 4% more often, exhibit 5% less hesitancy, make decisions 6% faster, enhance their planning skills by 6%, make 2% fewer errors, and excel by 8% in finding solutions to seemingly intractable situations when compared to the traditional educational format. These outcomes are linked to the development of a higher level of analytical thinking (a 9.97% increase) compared to the education format. Academic results among students in the studied groups did not differ significantly ($p > 0.05$), with an average score of 3.84±0.69 and 4.14±0.49, respectively. There was a 7.81% increase in the average score in the VR-technology group. The results of this conducted research demonstrate the positive impact of educational digitalization.

Review Type

Anonymous Reviewer/Anonymous Author

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Review Schedule

2024-03-01	2024-03-04	2024-03-09
Editor's Request	*Response Due Date*	*Review Due Date*

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This publisher has a policy for disclosure of potential competing interests from its reviewers. Please take a moment to review this policy.

Competing Interests

- (•) I do not have any competing interests
- ( ) I may have competing interests (Specify below)

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Review:Digitalization of Education: Possibilities of VR-Based Educational Resources and Their Impact on the Development of Analytical Thinking of Students

Reviewer Guidelines

Structuring Your Review

A four-part structure of moves is proposed review reports.

- **Move 1:** Summarizing judgment regarding suitability for publication
- **Move 2:** Outlining the article
- **Move 3:** Points of criticism (major issues and minor issues)
- **Move 4:** Conclusion and recommendation

Tips

►Give positive feedback first. Authors are more likely to read your review if you do so. But don't overdo it if you will be recommending rejection
►Briefly summarize what the paper is about and what the findings are
►Try to put the findings of the paper into the context of the existing literature and current knowledge
►Indicate the significance of the work and if it is novel or mainly confirmatory
►Indicate the work's strengths, its quality and completeness
►State any major flaws or weaknesses and note any special considerations. For example, if previously held theories are being overlooked

Major Issues

►Are there any major flaws? State what they are and what the severity of their impact is on the paper
►Has similar work already been published without the authors acknowledging this?
►Are the authors presenting findings that challenge current thinking? Is the evidence they present strong enough to prove their case? Have they cited all the relevant work that would contradict their thinking and addressed it appropriately?
►If major revisions are required, try to indicate clearly what they are
►Are there any major presentational problems? Are figures & tables, language and manuscript structure all clear enough for you to accurately assess the work?
►Are there any ethical issues? If you are unsure it may be better to disclose these in the confidential comments section

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►Are there places where meaning is ambiguous? How can this be corrected?
►Are the correct references cited? If not, which should be cited instead/also? Are citations excessive, limited, or biased?
►Are there any factual, numerical or unit errors? If so, what are they?
►Are all tables and figures appropriate, sufficient, and correctly labelled?

Your review will help the editor decide whether or not to publish the article. It will also aid the author and allow them to improve their manuscript. Giving your overall opinion and general observations of the article is essential. Your comments should be courteous and constructive, and should not include any ad hominem remarks.

Providing insight into any deficiencies is important. You should explain and support your judgement so that both editors and authors are able to fully understand the reasoning behind your comments.

Your Recommendation

When you make a recommendation, it is worth considering the categories the editor will likely use for classifying the article:

- **Reject** (explain your reasoning in your report)
- **Accept** without revision
- **Revise** – either major or minor (explain the revision that is required, and indicate to the editor whether you would be happy to review the revised article). If you are recommending a revision, you must furnish the author with a clear, sound explanation of why this is necessary.

Your recommendation is visible only to journal editors, not to the authors. There will be the opportunity to direct separate comments to the editor and author.

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Review:Digitalization of Education: Possibilities of VR-Based Educational Resources and Their Impact on the Development of Analytical Thinking of Students

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51977 Cover Letter, IJIET-12216-Cover Letter-RB.pdf	March 1, 2024	Cover Letter
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Reviewer Guidelines

Review Guidelines

Review Report for IJIET

Originality *

- Outstanding
- Outstanding
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- Fair
- Poor

Significance of Contribution *

- Outstanding
- Outstanding
- Good
- Fair
- Poor

Technical Soundness *

- Outstanding
- Outstanding
- Good
- Fair
- Poor

Quality of Presentation *

- Outstanding
- Outstanding
- Good
- Fair
- Poor

Comments to Authors *

After reading the clarification based on the previous comment, it is my great pleasure to inform you that your paper is qualified to be published.

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Upload files you would like the editor and/or author to consult, including revised versions of the original review file(s).

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Manuscript ID	IJIET-12216
Title	Digitalization of Education: Possibilities of Educational Resources based on Virtual Reality and Their Impact on the Development of Analytical Thinking of Students

Dear Reviewer and Editor,

First and foremost, the authors would like to express their utmost gratitude to the Editor and Reviewers for their valuable comments and suggestions and for the effort and time spent in attempting to improve the quality of this article throughout the review process. As such, we have attempted to address all queries and corrections as best as possible.

"Comments of the Reviewer" have been included (written in black), followed by "Author's response" (written in red), which explains how the changes have been incorporated, or provides further motivation. Some extracts from the paper to show how the reviewers' comments have been addressed are written in blue color. The location of the corrections/motivation has been indicated in red font on the updated manuscript.

We trust we have met the expectations of the Editor and Reviewers.

Author detailed response:

Reviewer 2:

Comment 1: Researchers should classify the general objectives and specific objectives of the research.

Response: Please carefully review Section B again. The research objectives. The purpose of the article is one, while the tasks by which it was achieved are two. In other words, the classification you are requesting is already present in the research.

Revised text: The study ***aims*** to determine the influence of Virtual Reality technology (VR technology) on the level of students' analytical thinking. ***The research objectives are as follows:*** (1) to ascertain the level of analytical thinking among students in groups with different learning formats (traditional methods vs. Virtual Reality technology); (2) to analyze the presence or absence of a correlation between students' level of analytical thinking and their academic performance.

Comment 2: The researcher should explain in detail the methods used in the research based on the suggested research objectives.

Response: The method used in the research was explained.

Revised text: In the study, an experimental method was employed, as it allowed for establishing causal relationships between the implementation of VR technology and changes in the level of analytical thinking. Such an approach facilitated obtaining objective and reliable data regarding the impact of the intervention.

Comment 3: Researchers should add theory to strengthen the methods used in answering general and specific research questions.

Response: References regarding the method used were added.

Revised text: Please add revised text.

Comment 4: At the instrument development stage, the researcher should mention the

development procedures in detail and the respondents at that stage.

Response:

All procedures for developing the tool have already been described earlier.

Revised text: Stage 1 involved the preparation and development of the questionnaire at the [BLINDED], where the authors conducted a series of preparatory activities. This included selecting the students included in the research (all students from the Faculty of Philology were included in the study), compiling and discussing questionnaire questions, and developing criteria for assessing responses.

Digitalization of Education: Possibilities of Educational Resources based on Virtual Reality and Their Impact on the Development of Analytical Thinking of Students

***Abstract*—This research aimed to assess how virtual reality technology influences students' analytical thinking skills. The study sample consisted of 436 third-year students from the Philological Faculty enrolled in the full-time program. The sample was divided into two groups: Group 1 (228 participants) consisted of students who studied the course "Philosophy of Social Sciences and Humanities" using traditional teaching methods, without the use of virtual reality technology. Group 2 (208 students) utilized virtual reality technology in their instruction. Research methods included an online survey of students and content analysis of the collected data. As a result of the study, it was determined that students in the group utilizing virtual reality technology reported a statistically significant 5% higher level of analytical thinking. There was a 7.81% increase in the average score in the VR-technology group. The results of this conducted research demonstrate the positive impact of educational digitalization.**

***Keywords*—analytical skills; digital learning technology; high education; student achievement; VR-technology**

I. Introduction

The concept of global development in the era of globalization envisages the proactive incorporation of contemporary digital technologies (including software, email, chat, distance learning platforms, virtual educational resources, cloud-based services, and applications) not just in daily life but also within the sphere of education. The digitalization of space and innovative technologies have the potential to enhance the quality of life and serve as a driver of socio-economic progress [1]. Digital information technologies play a vital role in the functioning of economies, cultures, and educational systems. They are ubiquitous in households, schools, hospitals, and universities, as well as within various enterprises. Their numbers continually expand and proliferate. Integrating digitalization into education facilitates continuous learning processes, creating conditions for seamless information exchange among educational stakeholders to enhance the quality of higher education [2,3].

The digitization of the education system also enhances the efficiency of educational programs and increases academic mobility. An indication of the growth in academic mobility is the number of prospective students who choose to pursue their studies at foreign universities. According to UNESCO data, the proportion of Russian students studying at foreign universities stands at 1.5%. However, between 2012 and 2016, this figure increased by 12%, and from 2014 to 2018, it ranged from 12,000 to 16,000 students. The digitization and globalization of education lead to competition among universities for prospective students and a reduction in educational boundaries [4]. Contemporary research demonstrates a direct correlation between the level of educational development and socio-economic progress [4]. The modernization of higher education is also influenced by factors such as funding, labour market demand and supply, the evolution of IT technologies, globalization of education, overall demographic conditions, disparities between the education level of graduates and employer expectations, and the imbalance in the number of young professionals relative to the economy's needs [4,5].

In 2018, the European Commission initiated a plan for the digitization of education, aimed at digitally transforming the educational process to cater to modern users and modernize it [6]. The principles of the education digitization plan encompass the following. Providing educational services in digital format, with digitization creating streamlined services focused solely on essential information, and fostering conditions for inclusive education. Ensuring the availability, confidentiality, authenticity, and integrity of data in education, while also addressing cybersecurity and personal data protection. Facilitating data and information exchange among universities, institutions, and European Union agencies. Developing digital solutions that enable seamless operations in organizations, making digital government services accessible across borders. Allowing for education tailored to individual needs, incorporating innovations, user interfaces, data visualization, and information accessibility.

The implementation of the education digitization plan is constrained by several factors: insufficient government support; the need to develop a digital strategy and a coordinated action plan; and the requirement to establish committees, institutions, technologies, and cybersecurity provisions [6].

To enhance the quality of education, a priority has been placed on the effective utilization of digital technologies (such as Google Meet, Twitter, SELFIE (Self-reflection on Effective Learning by Fostering the use of Innovative Educational Technologies), WTMST (Work Tasks Motivation Scale for Teachers) in teaching and learning. However, it has also been demonstrated that digital skills are deficient among educators [7].

Furthermore, the COVID-19 pandemic necessitated an abrupt shift to remote learning, exacerbating the situation even further and highlighting the urgent need for the development of digital competencies among teachers [8].

The Digital Education Action Plan (EC, 2020) calls for intensified efforts to enhance digital skills and competencies to support the digital transformation of education. For instance, the SELFIE tool (Self-reflection on Effective Learning by Fostering the Use of Innovative Educational Technologies) reveals a digital divide among participants in the education system, indicating a shortage of technical resources and technical support [9].

Modern research demonstrates that essential practical skills in the contemporary sphere include adaptability and rapid task-switching [10]. In education, it is essential to cultivate and develop (1) analytical thinking and innovation skills; (2) the application of active learning strategies; (3) creativity, originality, and initiative; (4) planning and programming abilities; (5) critical thinking and analysis; (6) holistic problem-solving capabilities; (7) leadership qualities and social interaction; (8) emotional intelligence; (9)

understanding and unconventional problem-solving aptitude; (10) systems analysis and evaluation [10]. To foster and enhance the mentioned contemporary adaptive skills, it is necessary to: 1) employ digital technologies, products, and services; 2) establish an innovative learning environment; 3) engage qualified personnel in the realm of digital innovations; 4) create technological infrastructure accessible to consumers; 5) attract private and government investments in innovations and technologies [8]. Limitations encompass 1) low institutional assimilation in digital development; 2) low infrastructure levels; 3) an outdated education system with a lack of focus on STEM education and soft skills formation; 4) a shortage of highly qualified personnel; 5) low levels of automation and digitization of government services [10].

The digitization of education not only allows for reform but also enables the effective modernization of the global educational environment. Digitization entails the use of all forms of information (text, sound, imagery, video) in digital format. The phenomenon of digitization lies in its capacity to enhance the knowledge and competencies of students (teamwork, three-dimensional modelling, process visualization), while fostering logical thinking and communication skills [11]. This is driven by the active utilization of digital scholarly literature, educational videos on platforms like YouTube, online courses, and video lectures by contemporary students in their learning processes [11,12].

Educational technologies elicit students' interest, and awaken their research and creative endeavours, thereby contributing to the development of critical thinking among students. They promote the analysis of practical problems and decision-making, foster collaborative skills, and facilitate the cultivation of digital literacy and adaptability [13]. By incorporating an emotional component in students and stimulating their high-level mental processes, the digitization of education contributes to the formation and development of analytical thinking. It teaches rapid adaptation to professional requirements and modern labour market demands. Hence, the primary task of contemporary higher education is to foster and develop analytical thinking. This not only empowers individuals to comprehend theoretical principles and gain practical competencies but also motivates them to reflect upon and understand professional procedures [14,15].

Analytical thinking is an individual's ability to process and decompose information with a detailed examination of each part. It enables (1) the analysis of large datasets; (2) the development of logical thinking; (3) the selection of new information; (4) the formation of conclusions; (5) attention to detail; (6) the comparison of facts; (7) the separation of the main from the secondary; (8) the skill of comparing and establishing connections between processes [16,17].

Innovative technologies have a substantial impact on the development and improvement of analytical thinking, enabling diverse communication within the educational context and fostering an environment conducive to student involvement. Students comprehend and reflect upon their knowledge and thoughts. Innovative pedagogy is characterized by a high level of active interaction and emotional synergy among participants. Innovative educational technologies like virtual reality [18,19], brainstorming [20], and the discussion method [21,22] serve to capture students' interest, encourage active individual participation, influence students' emotions, facilitate highly effective information absorption, provide feedback, and help students form opinions, attitudes, skills, and behaviours. The challenges faced by educators in integrating innovative technologies include a lack of methodology knowledge, uncertainty about their effective use, and mistrust in the efficacy of modern methods [23].

The feedback from students constitutes a vital component for the successful implementation of innovative educational technologies. Open communication between students and educators is essential for understanding their needs and preferences, thereby facilitating more effective adaptive curriculum design [24]. Such dialogue can identify opportunities for integrating new technologies, such as virtual reality (VR). Consequently, comprehending students' needs and expectations enables the more efficient integration of innovative teaching methods, such as VR technology, which can provide a more immersive learning experience.

Virtual reality technology represents an effective learning environment that not only expands the physical learning space but also provides students with a richer learning experience and educational resources. Virtual reality technology allows for (1) immersing students in the learning process, (2) stimulating their imagination, (3) enabling interaction among students, (4) providing situational support for a more in-depth study of agricultural students, and (5) fostering the development of high-level thinking [25]. Furthermore, this research on the capabilities of modern digital educational resources and their impact on students' level of analytical thinking complements and deepens previous investigations on this issue.

A. Literature Review

Russian scholars [26] have investigated the development of students' analytical thinking. The application of modern digital interactive educational resources allows for (1) the cultivation of analytical thinking skills, (2) the achievement of set objectives, (3) the modelling of rational decision-making in professional practical tasks, (4) the analysis of processes and events, (5) the integration of multifactorial practical tasks, and (6) the utilization of group learning. This is because innovative educational technologies have the potential to strongly motivate students to participate in learning, improve their skills, and shape their behaviour. Analytical thinking enables the identification of relationships among two or more studied variables, with one variable being the dependent variable while the others serve as factors [26].

The impact of digital game-based learning on motivation, knowledge levels, and critical thinking was investigated by a team of researchers from Taiwan in 2021. The utilization of gaming technologies (bingo games) and mobile applications (Socrative application) in education contributes to increased motivation, knowledge levels, and the development of critical thinking among students. Both digital technologies exert a favourable impact on educational results through diverse mechanisms, encompassing concentrated attention, brainstorming, active engagement, interaction, and logical reasoning. Although bingo games have a greater impact on boosting motivation for learning, Socrative contributes more

to knowledge exchange and critical thinking. The Socrative mobile application is characterized by rapid interaction between students and educators, featuring a user-friendly interface that enhances the enjoyment of mobile learning environments and facilitates efficient knowledge exchange. It also plays a crucial role in the formation and development of critical thinking [27].

A team of researchers from Russia [28] examined the impact of virtual reality technology on students' thinking. Virtual reality technology allows for the integration of three-dimensional animation, interactivity, and text-sound support. Through the augmentation of collateral and semantic connections, virtual reality technology contributes to (1) the development of thinking, (2) the generation of new non-standard solutions to posed tasks, (3) the stimulation of cognitive processes (forecasting optimal solutions, analysis through synthesis), and (4) the effective influence on the formation and development of figurative, formal-logical, and analytical thinking [28].

A team of researchers from Spain [7] investigated the impact of modern digital technologies on educational resources. The outbreak of COVID-19 and the shift to remote learning compelled the field of education to urgently transition to a new digital format of operation. The perception of digital technologies depends on the motivation of educators, which changed both the quarantine and post-quarantine periods. During the study period, along with an increase in motivation levels, educators' confidence in their digital teaching competence improved. Skills related to preparing digital lessons, creating their own digital content, classroom teaching, assessment, and providing feedback also improved. Communication skills with students and families saw enhancements as well. The increase in educators' digital literacy can be attributed to (1) continuous professional development activities, (2) the utilization of digital technologies in pedagogical practice, and (3) feedback and support from students [7].

Researchers from Turkey [29] investigated the development of algorithmic thinking in the context of digital education. The development of algorithmic thinking is a key skill in STEM education (Science, Technology, Engineering, Mathematics) and enables the improvement of solutions to practical problems through effective information analysis, causality determination, and planning. To facilitate education, the Arduino technology is employed. Arduino is a modern hardware and software system based on an integrative approach, where disciplines (biology, physics, chemistry, and mathematics) are taught not in isolation but interconnected with each other. This approach fosters effective solutions to real-world problems. Such an approach considers problems as a whole system rather than within the confines of individual scientific disciplines. In practical STEM-oriented lessons with the use of Arduino technology, the holistic perception of posed problems enhances the development of algorithmic thinking skills [29].

A team of researchers from Russia [30] elucidated the application of digital technologies in cultivating analytical competence among future professionals. The digitization of education extends traditional learning by harnessing the expanded capabilities of mobile platforms (such as AppStore, BlackBerry App World, GooglePlay, 1mobile market, Windows Phone Store, and Yandex.store) and learning environments, thereby facilitating the development of students' analytical competence. Analytical competence is built upon the foundation of (1) seeking new information, (2) analyzing and synthesizing acquired data, and (3) concluding. Analytical competence represents an individual's readiness to harness their potential (knowledge, skills, experience, and personal qualities) for successful socialization and adaptation in professional endeavours [30]. Analytical competence comprises the following components: managerial, strategic, informational, and reflexive [30].

The managerial component entails the ability to (1) plan work, coordinate goals, responsibilities, and professional agreements, and (2) make objective managerial decisions. The strategic component involves an individual's readiness and capability to define goals, tasks, resources, and deadlines for their activities, as well as engage in collaborative efforts. The informational component is manifested in skills related to harnessing the potential of information and communication technologies and mobile technologies. The reflexive component encompasses the ability to work in teams, and analyze, and evaluate group activities. Current digital technologies are efficient and readily available tools for nurturing students' analytical competence, facilitating not only its development but also significant enhancement [30].

In the realm of interactive education, scholars from Indonesia [31] have investigated the correlation between analytical thinking aptitude and the ability to engage in scientific argumentation. Presently, students demonstrate a deficiency in both analytical thinking and the capacity for scientific argumentation, with the integration of digital technology in education further compounding this issue. The adoption of digital modelling technology introduces fresh problem-solving algorithms to students, consequently elevating their proficiency in scientific argumentation and analytical thinking skills. There exists a statistically significant correlation between these two skills. The Problem-Based Learning (PBL) modelling technology is a student-centred methodology that enables students to (1) explore professional issues, (2) engage in small-group sessions, (3) facilitate group learning, and (4) promote self-directed learning. The use of PBL technology with web-based modelling in the digital learning environment effectively improves students' scientific knowledge, argumentation skills, and analytical thinking through the acquired skill of modelling results and consequences [31].

The role of digital technologies in professional education and training has been examined by researchers from Germany and Sweden [32]. Contemporary digitization stimulates adaptation not only in business models but also in education. The integration of digitization necessitates specific skills and competencies from modern professionals that are relevant in the job market, including management competencies, problem-solving skills, social competencies, scientific literacy, digital competencies, and media. In the realm of professional education, there exists a demand for information literacy among employees in the workplace, particularly in the execution of job tasks and decision-making processes. All employers concur on the necessity of (1) future professionals possessing practical competencies, (2) understanding the production process when working with

modern technical means, machinery, and equipment, and (3) organizing logical/analytical production and product packaging/packaging. Such competence can be acquired in education through the integration of virtual modelling and digital capabilities [32].

Contemporary digital educational resources have been studied by researchers from Malta, UK [1]. The methodology of «the pace of technological innovativeness» and the «technology acceptance model» enables the determination of the rationale for the application of digital capabilities in education, as well as an assessment of their costs and benefits. Educators are inclined toward the use of digital technologies in line with «the pace of technological innovativeness» and the «technology acceptance model Additionally, younger mentors are more actively engaged in modern digital educational resources. Digital educational technologies, including gamification and electronic methodologies, actively engage students in the learning process, thus garnering significant positive reception among students and positively influencing their motivation. Such technologies facilitate the creation and analysis of various educational content in terms of complexity levels [1].

The impact of digital technologies on the development of professional analytical skills has been examined by researchers from the UK [33]. Digital technologies, Big Data, and analytical skills significantly influence the formation of professional competencies (team-building, planning, computer literacy, critical thinking) among students at individual, organizational, national, and international levels. Contemporary digital educational resources enable the acquisition of new skills related to responsibility and professional decision-making. The cultivation of professionalism (professional education) among students is effectively realized through its entanglement with digital technologies, allowing for (1) the transformation of individual labour knowledge, divisions of labour, and labour identity, and (2) the acquisition of simple technical non-standard solutions to complex professional tasks and issues [33].

The development of analytical competence in the educational environment based on case-based learning has been studied by researchers from Germany [34]. Analytical competence is considered an important aspect of forming professional competence. The educational format and multiple support mechanisms, including authentic comments made by teachers and learners, enable participants to consider various aspects of assigned tasks, analyze them, and forecast outcomes, thereby fostering cognitive flexibility and analytical thinking. The formation of analytical competence is also influenced by educational environment technologies, such as audio and video content, which teach individuals to "sense," remember, and utilize information. The level of analytical competence (students' ability to apply conceptual knowledge) is higher in groups using the audio format compared to those using the audio and video format [34]. Additionally, this research on the capabilities of contemporary digital educational resources and their impact on students' level of analytical thinking complements and enhances the previously conducted studies on this issue.

B. *Research Objectives*

The focus is on the incorporation of modern digital educational resources in higher education to enhance learning and facilitate the integration of practical knowledge, skills, and competencies. The relevance of this research is defined by the choice of the topic - the digitization of education: the possibilities of modern digital educational resources and their impact on students' analytical thinking. The study aims to determine the influence of Virtual Reality technology (VR technology) on the level of students' analytical thinking. The research objectives are as follows: (1) to ascertain the level of analytical thinking among students in groups with different learning formats (traditional methods vs. Virtual Reality technology); (2) to analyze the presence or absence of a correlation between students' level of analytical thinking and their academic performance.

The scientific novelty lies in the fact that this research will analyze the presence or absence of the influence of modern digital educational resources on the level of analytical thinking. It will also examine the presence of a correlation between the level of analytical thinking and students' academic performance. The application of VR technology in university education allows for its high effectiveness and personalized learning, making it an accessible tool.

II. Methods and Materials

A. *Study Design and Sampling*

The scientific study was conducted at the [BLINDED] in the Russian Federation. The research experiment took place during the study of the course "Philosophy of Social Sciences and Humanities" because the course's curriculum has the highest level of independent work (73%). To facilitate the mastery of the course material, immersive VR technology was integrated into the educational process, enabling the following: (1) integration of auditory and visual components into practical scenarios and tasks; (2) formation and acquisition of more meaningful knowledge; (3) enhanced information retention; (4) representation of information in multiple ways; (5) provision of an authentic context; (6) realism in learning; (7) active engagement in the educational process; and (8) increased student motivation [35].

A sample of 436 third-year students from the Faculty of Philology, who were enrolled in full-time programs, was selected for this study. The choice of this cohort was based on the fact that the curriculum for third-year students involves a self-study workload of over 60%.

In the study, an experimental method was employed, as it allowed for establishing causal relationships between the implementation of VR technology and changes in the level of analytical thinking [36]. The experiment enabled the control of other factors that might influence the research outcomes and established a direct link between the introduction of VR technology and changes in analytical thinking [36]. Such an approach facilitated obtaining objective and reliable data regarding the impact of the intervention. To compare the impact of VR technology on students' levels of analytical thinking, the sample was divided into two groups: Group 1 (228 participants) consisted of students who studied the course "Philosophy of Social Sciences and Humanities" using traditional teaching methods (lecture, explanation,

classroom discussion, illustrative material, and demonstration) without the use of VR technology. Group 2 (208 students) consisted of students who studied the same course but with the inclusion of VR technology. The average age of the students was 21.43±0.55 (Group 1) and 21.79±0.23 (Group 2). The gender distribution was 56% female and 44% male for Group 1 and 58% female and 42% male for Group 2, with no significant differences ($p>0.05$) observed. The selection criteria for the sample were aligned with the contemporary demands of the labour market, where future professionals are expected to (1) develop and integrate new models of societal processes and (2) apply interactive technologies for rational and effective professional decision-making. The course comprises a total of 60 hours of study (equivalent to 2 ECTS credits), which are distributed as follows: 6 hours for lectures (L), 10 hours for practical classes (PC), and 44 hours for self-study (SS). The breakdown of the course workload shows that classroom-based instruction constitutes 27%, while student self-study makes up the remaining 73% (see Table 1).

The course contributes to the development of the following generic competencies (GCs):

GC-1: Analytical Thinking Skills - The ability to perceive, analyze information, and make effective, rational decisions.

GC-2: Planning and Conducting Complex Research - The ability to plan and conduct comprehensive research.

GC-3: Application of Knowledge in Practical Situations - The ability to apply knowledge in practical situations.

GC-4: Quality Management System Development and Integration - The ability to develop and integrate a quality management system for provided services and products.

GC-5: Integration of Knowledge and Clear Communication - The ability to integrate knowledge, formulate judgments based on insufficient or limited information, and communicate one's conclusions and knowledge clearly and unambiguously, reasonably justifying them to both professional and non-professional audiences.

Table 1. Structure of the course "Philosophy of Social and Humanities Sciences"

No	Topics	Hours			Formed Competencies
		L	PC	SSR	
1	Philosophy as a System of Knowledge, Activity, and Social Institution.	2	2	4	GC-1, GC-2, GC -5
2	The Place and Role of Philosophy in the Development of Culture and Civilization.	-	-	4	GC 1, GC -3, GC -4,
3	The Emergence of Philosophy, Stages of Its Historical Evolution, and Its Connection with Social and Humanities Sciences.	-	2	4	GC -2, GC -3, GC -4, GC -5
4	III. Key Concepts in Contemporary Philosophy. The Alternatives between Dialectics and Metaphysics in Philosophy.	-	2	4	GC -1, GC -4, GC -5
5	IV. The Laws of Dialectics and Their Application in Social and Humanities Sciences.	-	-	4	GC -2, GC -4
6	Socio-Cultural Aspects of Philosophy.	2	-	4	GC -4, GC -5
7	The Structure of Scientific Knowledge: Its Methods and Forms. The Role of Methodology in Scientific Cognition.	-	-	4	GC -2, GC -3, GC -5
8	The Dynamics of Science as a Process of Generating New Knowledge.	-	2	4	GC -1, GC -4, GC -5
9	Traditions and Innovations in the Development of Science. Scientific Revolutions.	-	-	4	GC -1, GC -5
10	Characteristics of the Contemporary Stage of Science Development.	2	-	4	GC -2, GC -3, GC -4
11	V. Philosophy of Science. Models of Scientific Cognition.	-	-	4	GC -1, GC -5
12	Final Assessment.	-	2	-	GC -1, GC -2 GC- 3, GC -4 GC -5
Total		6	10	44	

The course was conducted in real-time online mode; practical sessions were facilitated through the use of Microsoft Teams; educational materials were available 24/7; lectures were also accessible as recorded video/audio content; communication with instructors occurred using modern digital services (Microsoft Teams chat, Skype, Telegram, email); the sessions were conducted by the pedagogical team of the [BLINDED] University.

B. Research Methods

To assess the level of analytical thinking, the authors developed a questionnaire titled "Analytical Thinking of Students" (Appendix).

The research was conducted in three stages: 1) preparation for the research and questionnaire development; 2) surveying of students; and 3) compilation and analysis of the gathered information.

Stage 1 involved the preparation and development of the questionnaire at the [BLINDED], where the authors conducted a series of preparatory activities. This included selecting the students included in the research (all students from the Faculty of Philology were included in the study), compiling and discussing questionnaire questions, and developing criteria for assessing responses. During the questionnaire development process, 10 questions were selected to assess individual respondent abilities, including the ability to break down large sets of information into smaller components, establish correlations between processes, factors, and facts, make non-standard rational decisions for professional tasks, analyze and compare data, and forecast the effectiveness of assigned tasks. To assess the validity and reliability of the questionnaire, Cronbach's alpha coefficient and factor analysis using principal component analysis were employed. The Cronbach's alpha coefficient yielded a value of 0.85, indicating high internal consistency among the questionnaire items. Furthermore, the factor analysis confirmed the appropriate grouping of questions by factors, and eigenvalues greater than one indicated an adequate number of factors to account for the variability in the data. Thus, the obtained results corroborate the validity and reliability of the questionnaire utilized.

Stage 2 involved conducting the student surveys using the online service Google Forms. The questionnaire consisted of 10 open-ended questions where respondents entered their

answers. The authors distributed the questionnaire link to students, and the link remained active for one month (January 2022). Respondents had the option to complete the survey using a computer or smartphone.

Stage 3 encompassed the synthesis and analysis of the collected data, carried out by a team of experts consisting of 2 candidates and 3 doctorates in psychological and philosophical sciences. The level of analytical thinking ranged from 0 to 10 points and was categorized into three intervals: low level (0 to 3 points), moderate level (4 to 7 points), and high level (8 to 10 points).

Online surveys of students, and content analysis of collected data. The assessment of academic performance was conducted on a five-point scale, where "1" indicated weak performance, "2" - fair, "3" - satisfactory, "4" - good, and "5" - excellent.

C. Statistical Data Analysis

Statistical analysis of the research results was conducted using the Microsoft Office Excel software package from Microsoft Office and occurred in two stages:

1. Analysis of quantitative parameters; calculations were performed according to the formula (M±SD), where M represents the mean arithmetic value, and SD is the standard deviation. In all statistical analysis calculations, the significance level (p) was set to 0.05;

2. Correlation analysis - conducted to determine the presence/absence of a relationship/correlation between the level of thinking and the academic performance of students. The Pearson coefficient (r) was used, with values of r (in absolute terms) up to 0.2 indicating a very weak correlation, up to 0.5 indicating a weak correlation, up to 0.7 indicating a moderate correlation, up to 0.9 indicating a high correlation, and above 0.9 indicating a very high correlation.

D. Research Limitations

The study did not include students from the following faculties: engineering and technology, mathematics and natural sciences, economics and management, and law. This exclusion was due to differences in their educational programs and curriculum requirements.

E. Ethical Issues (Compliance with Ethical Standards)

This non-therapeutic research was conducted by the principles of the Helsinki Declaration on Ethical Principles for Medical Research Involving Human Subjects. All research participants were informed about the purposes and methods of the study, and they provided informed consent. Additionally, conditions of complete anonymity were maintained, and there were no conflicts of interest. The University's Bioethics Committee approved the conduct of the research in the 2021/2022 academic year.

III. RESULTS

The research findings revealed that when comparing groups utilizing traditional teaching methods and VR technology, the level of analytical thinking was significantly higher by 9.97% in the VR technology group ($p<0.05$). The level of analytical thinking in the studied groups was 7.32±0.36 (average level) and 8.05±0.11 (high level), respectively (Table 2). These results indicate that the integration of modern digital VR technology enables an increase in the level of analytical thinking by 9.97%.

Table 2. Learning outcomes of the students

Research participants	Group 1 (228 participants), traditional learning	Group 2 (208 students), VR-technology	p-value
	M±SD	M±SD	
Analytical Thinking	7.32±0.36	8.05±0.11	0.042**
Academic Results	3.84±0.69	4.14±0.49	0.058*

* - $p>0.05$, not significantly different; ** - $p<0.05$, significantly different

In self-assessing their analytical thinking abilities, respondents in the traditional education and VR-technology groups believe they possess such thinking at rates of 82% and 87%, respectively; probably have it - 7% and 10%, respectively; do not have it - 11% and 3%, respectively ($p<0.05$). Students using VR technology consider themselves to have analytical thinking skills 5% more significantly, which may be associated with the formation and development of neural connections, and an increase in collaterals and semantic connections during the development of analytical thinking. The number of experiment participants using trigonometry and statistics in the investigated groups is 81% and 87%, respectively ($p<0.05$). Students with VR technology use trigonometry and statistics 6% more frequently, which may be associated with their ability to solve geometric problems with elements of trigonometry, thereby developing their intelligence, logic, and the ability to draw conclusions and find simple non-standard solutions.

Computer technologies are used by 77% and 81% of respondents, respectively, for solving various tasks, problems, and situations ($p>0.05$). There are no significant differences between the investigated groups in the use of computer technologies, but the VR-technology group uses computer technologies 4% more frequently. This may be associated with the fact that computer technologies (modelling, synergy) contribute to the development of systemic-analytical thinking among students. Indecisiveness was observed in both the traditional education group and the VR-technology group, at rates of 13% and 8%, respectively ($p<0.05$). Students with VR technology are 5% significantly less indecisive, which may be linked to a lower level of inability to predict the outcomes of their own decisions.

Fast decision-making was observed in 88% and 94% of respondents in the investigated groups ($p<0.05$). Students with VR technology make decisions 6% faster, which may be associated with a higher level of knowledge that enables them to make efficient and non-standard decisions more quickly. Positive dynamics in planning skills were noted in 71% and 77% of respondents in the investigated groups, respectively ($p<0.05$). Students with VR technology develop their planning skills 6% better, which may be linked to their ability to break down tasks into parts and establish cause-and-effect relationships.

Errors were made by students in both the traditional learning group and the VR-technology group, with percentages of 24% and 22%, respectively ($p>0.05$). Students with VR technology make 2% fewer errors, which may be associated with their more attentive and detailed examination of the problem or task at hand. There are no hopeless situations for 22% of students in the VR-technology group

and 14% of students in the traditional learning group ($p<0.05$); they seek alternative solutions in 78% and 86% of cases, respectively ($p<0.05$). Students with VR technology are 8% more effective at finding solutions to hopeless situations, which may be attributed to their ability to actively search for non-standard and simple solutions to the tasks at hand and their possession of effective thinking skills.

They predict the effectiveness of the tasks they set in 83% and 89% of cases for the students in the respective groups ($p<0.05$). Students with VR technology predict the effectiveness of their tasks 6% more often, which may be linked to their more frequent, thorough, and effective analysis of past processes, trends, and events. Both groups of students, in the traditional learning group and the VR-technology group, use tables at a rate of 53% and 56%, respectively ($p>0.05$). Students with VR technology use tables 3% more frequently, possibly due to their mathematical skills.

The study established that when comparing groups using traditional teaching methods and VR technology, students' academic results do not differ ($p>0.05$), but there is a tendency for improvement in the VR-technology group. The average score was 3.84±0.69 and 4.14±0.49, respectively, with a 7.81% increase in the average score in the VR-technology group (Fig. 1). These results indicate that the integration of modern digital VR technology allows for an increase in academic results by 7.81%. Students taught using traditional teaching methods have a lower average score compared to students who used VR technology.

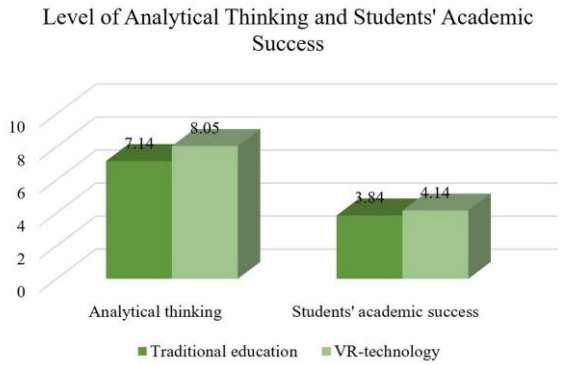

Fig. 1. Level of analytical thinking and students' academic success.

To determine the presence or absence of a correlation between students' level of analytical thinking and their academic performance, a correlation analysis was conducted. The results of the correlation analysis revealed a moderate positive correlation in the studied groups: the Pearson correlation coefficient was $r1=0.761$ (traditional education) and $r2=0.846$ (VR technology), respectively. The research findings indicate that students in the VR-technology group have a significantly higher level of analytical thinking by 5%. They also use trigonometry and statistics 6% more frequently, computer technologies 4% more frequently, exhibit 5% less indecisiveness, make decisions 6% faster, develop planning skills 6% better, make 2% fewer errors and find solutions to seemingly insurmountable situations 8% more effectively compared to their counterparts in the traditional education group. This observed enhancement in analytical thinking could potentially be attributed to a 9.97% increase.

Academic performance among students in the studied groups does not differ significantly ($p>0.05$), with an average score of 3.84±0.69 and 4.14±0.49, respectively. However, there is an increase of 7.81% in the average score among students in the VR-technology group. The research has established a moderate positive correlation between the level of analytical thinking and academic performance among students. To put it differently, improved academic outcomes are linked to elevated levels of analytical thinking, and the utilization of VR technology fosters the development of enhanced analytical thinking abilities in students.

In the study examining the capabilities of modern digital educational resources and their impact on students' analytical thinking levels, it was determined that the application of VR technology leads to (1) an increase of 9.97% in the level of analytical thinking and (2) a 7.81% increase in the average grade. This can be attributed to the notion that digital educational opportunities foster the growth, comprehension, and grasp of professional tasks, processes, and situations. Furthermore, there is a moderate positive correlation between the degree of analytical thinking and the academic accomplishments of students.

IV. Discussion

Researchers in the USA [37] investigated the application of modern digital virtual reality tools in student education. Their study revealed several advantages of 360 VR-technology simulation in education: (1) It effectively enables students to absorb large volumes of information; (2) It supports novice students in acquainting themselves with new contexts and communities; (3) It facilitates macro- and micro-practice. Furthermore, immersive VR technology environments contribute to the activation of the emotional component, the formation of semantic connections, and the holistic perception of assigned tasks, which form the basis for the development of analytical thinking. The results of our study also demonstrate the positive impact of VR technology on the level of analytical thinking among students. The use of VR technology for education results in a 9.97% increase in the level of analytical thinking compared to the traditional education group.

The impact of virtual reality technologies on the development of students' thinking was investigated by researchers in China [38]. They conducted a study on clinical thinking among medical students, which forms the foundation for making profession-oriented decisions. The application of modern digital educational technology, virtual reality, allows for the following outcomes: (1) Effective development of students' visual-spatial abilities and comprehension of the material; (2) Provision of a realistic clinical learning environment for students; (3) Reduction of the gap between theoretical knowledge and practical competencies; (4) Conservation of educational resources; (5) Formation and enhancement of critical thinking skills. In our study, the use of VR technology enabled an increase in the level of analytical thinking by 9.97% and raised the average score by 7.81%.

A team of researchers from Russia [39] examined the development of thinking skills using modern digital educational resources. The authors assert that a key competence in higher education is critical thinking, which

needs to be cultivated and enhanced. The researchers investigated the development of critical thinking in an online learning environment by increasing student engagement in the educational process. This study reveals a correlation between preferred learning styles and levels of critical thinking. The research findings demonstrate that 54.8% of respondents positively perceive reflective learning, which involves critical assessment and analysis of the information received. In our study, the level of analytical thinking, involving the analysis of received information, in the examined groups was 7.32 points (73.20%) and 8.05 points (80.50%), respectively.

Researchers from the USA [40] have described the impact of digital virtual reality technology on systemic thinking skills. The results indicate that virtual reality technology is (1) an effective tool for stimulating high-level systemic thinking skills, enabling the development of effective decision-making skills, conducting analysis, and increasing the level of thinking. These findings align synchronously with our results, as the application of VR technology allowed for an increase in the level of analytical thinking by 9.97%. Furthermore, the authors of the U.S. study assert that virtual reality technology (2) is positively perceived by students, (3) the level of education is an important factor in shaping thinking—individuals with higher education tend to have a higher level of thinking, and (4) gender does not influence the systemic thinking skills of students.

A team of researchers from Russia [41] examined the relationship between thinking styles and the academic success of students. The researchers identified a significant correlation between managerial and practical thinking styles and academic performance. In our study, a positive correlation was found between analytical thinking and academic achievement. Respondents in the Russian study demonstrated above-average success, which aligns with the results of our study.

The development of analytical thinking in digital education was studied by researchers in India [42]. Analytical skills enable individuals to visualize a problem, gather a larger amount of information, compare facts, find optimal and efficient solutions, and aid in strategic planning. Analytical thinking encompasses skills related to communication, creativity, critical thinking, data analysis, and research. Enhancing analytical thinking involves activities such as observation, reading more, exploring how things work, asking questions, and practising problem-solving skills. Modern digital education tools, including MOOCs, Streams, and others, contribute to the development of analytical thinking. In our research, we demonstrated the effectiveness of applying digital education technology, specifically virtual reality, which not only resulted in an increase in the level of analytical thinking by 9.97% but also led to a 7.81% increase in the average score.

The influence of the level of analytical thinking on subject knowledge was examined by researchers in Indonesia [17]. Analytical thinking skills require students not only to memorize and understand the material but also to apply it in their professional activities. The authors also emphasize that analytical thinking skills in students need to be cultivated, developed, and practised through the interpretation of information and the identification of similarities and differences in the presented data.

As a result of the research, it was found that the level of analytical thinking among Indonesian respondents was 41.89%. In our study, the level of analytical thinking in the investigated groups was determined to be 7.32 points (73.20%) and 8.05 points (80.50%), respectively. The integration of modern digital educational resources into the higher education system contributes to the digitization and modernization of educational processes. This leads to improvements not only in student success but also in the level of their analytical thinking.

V. Conclusions

Digitization of education not only ensures the continuity of the learning process and provides a high level of theoretical knowledge and practical competencies but also enhances the level of analytical thinking in modern students. The sample consisted of 436 third-year students in full-time education. To compare the impact of VR technology on the level of students' analytical thinking, the sample was divided into two groups: Group 1 (228 participants) - students who were taught using traditional teaching methods without the use of VR technology, and Group 2 (208 students) - students who used VR technology. To assess the level of analytical thinking, the "Analytical Thinking of Students" questionnaire was employed. Research methods included an online survey of students and content analysis of the obtained results.

The research findings revealed that students in the VR-technology group demonstrated a statistically significant increase in their analytical thinking skills by 5%. Furthermore, they exhibited a 6% higher propensity to utilize trigonometry and statistics, a 4% greater inclination toward using computer technologies, a 5% reduction in indecisiveness, a 6% improvement in decision-making speed, a 6% enhancement in their planning skills, a 2% decrease in errors, an 8% improvement in finding solutions in challenging situations, and a 3% higher frequency of utilizing tables. These findings are attributed to the development and cultivation of a higher (9.97%) level of analytical thinking. It is noteworthy that the academic achievements of students in the examined groups did not exhibit any significant differences ($p > 0.05$). The mean score for the VR-technology group was 4.14 ± 0.49, indicating a 7.81% increase in average scores compared to the group without VR-technology integration.

The results of the conducted research demonstrate the positive impact of educational digitalization: the integration of contemporary digital educational resources such as VR technology not only enhances the academic performance of students but also significantly increases their level of analytical thinking. In the future, there are plans to introduce a live webinar titled "Development of Analytical Thinking in Digital Learning Environments" for higher education. This webinar, facilitated through web technologies in a live streaming mode, will incorporate innovative educational techniques (immersive immersion, brainstorming, dialogues, exercises, situational problems) aimed at improving theoretical knowledge and practical skills.

APPENDIX

Dear respondent,

We kindly request your participation in a scientific research study conducted by the [BLINDED] University.

Please provide your responses to the following questions.

NO	QUESTIONS	ANSWER
1.	Do you possess analytical thinking? Please justify your answer.	
2.	Describe a task for which you needed to use trigonometry or statistics to solve.	
3.	Describe a problem for which you utilized computer technologies to find a solution.	
4.	Share a situation in which you experienced indecision	
5.	Describe a scenario in which you had to make a quick decision.	
6.	In your opinion, how much have you improved your planning skills over the last few years?	
7.	Under what circumstances do you usually make mistakes?	
8.	What actions do you take in seemingly impossible situations?	
9.	Based on what factors do you typically predict the effectiveness of set tasks?	
10.	How often do you use tables?	

Thank you for participating in the research study!

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