

Virtual laboratories for education in science, technology

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Citation Report

#	ARTICLE	IF	CITATIONS
1	Distance learning and skill acquisition in engineering sciences. Multicultural Education and Technology Journal, 2013, 7, 64-88.	2.0	9
2	OptoBridge. , 2016, , .		4
3	Virtual Metrology Laboratory for e-Learning. Procedia CIRP, 2016, 43, 148-153.	1.0	28
4	Developing a Mobile System for Natural Language Grammar Acquisition. , 2016, , .		1
5	Interactive Simulator for Electric Engineering Training. IEEE Latin America Transactions, 2016, 14, 2246-2252.	1.2	7
6	Systematic Review of Two Decades (1995 to 2014) of Research on Synchronous Online Learning. American Journal of Distance Education, 2017, 31, 3-19.	1.0	46
7	Online assessment of dimensional numerical answers using STACK in science. European Journal of Physics, 2017, 38, 035701.	0.3	6
8	The comparison of studentsâ€™ satisfaction between ubiquitous and web-based learning environments. Education and Information Technologies, 2017, 22, 2565-2581.	3.5	36
9	VGLS: A virtual geophysical laboratory system based on C# and viustools and its application for geophysical education. Computer Applications in Engineering Education, 2017, 25, 335-344.	2.2	12
10	Augmented reality in laboratory-based education: Could it change the way students decide about their future studies?. , 2017, , .		4
11	Plug-in Free Web-Based 3-D Interactive Laboratory for Control Engineering Education. IEEE Transactions on Industrial Electronics, 2017, 64, 3808-3818.	5.2	63
12	Development of Virtual Laboratory for Mechatronic Systems. Advances in Intelligent Systems and Computing, 2017, , 622-630.	0.5	5
13	How Have Robots Supported STEM Teaching?. , 2017, , 103-129.		34
14	Using force-feedback devices in educational settings: a short review. , 2017, , .		7
15	Virtual, Augmented, and Mixed Realities in Education. Smart Computing and Intelligence, 2017, , .	0.7	80
16	Robotics in STEM Education. , 2017, , .		20
17	Static Testing of Propulsion Elements for Small Multirotor Unmanned Aerial Vehicles. , 2017, , .		31
18	UKI: universal Kinectâ€™type controller by ICE Lab. Software - Practice and Experience, 2017, 47, 1343-1363.	2.5	11

#	ARTICLE	IF	CITATIONS
19	Virtual Biotechnological Lab Development. <i>BioNanoScience</i> , 2017, 7, 363-365.	1.5	10
20	Exploring the educational potential of three-dimensional multi-user virtual worlds for STEM education: A mixed-method systematic literature review. <i>Education and Information Technologies</i> , 2017, 22, 2235-2279.	3.5	51
21	Development of virtual metrology laboratory based on skin model shape simulation. <i>Lecture Notes in Mechanical Engineering</i> , 2017, , 1023-1032.	0.3	0
22	Utilizing virtual reality to assist students in learning physics. , 2017, , .		6
23	Simulation-based business game for teaching methods in logistics and production. , 2017, , .		9
24	Virtual reality vs. reality in engineering education. , 2017, , .		24
25	Teaching-Learning Process through VR Applied to Automotive Engineering. , 2017, , .		15
26	Designing for Learning Using Virtual Worlds. , 2017, , 305-364.		1
27	Model to Implement Virtual Computing Labs via Cloud Computing Services. <i>Symmetry</i> , 2017, 9, 117.	1.1	19
28	Virtual experiment method for MOOCs to solve abstract key notes and difficult points. , 2017, , .		3
29	Pedagogical Methods and Technology Used in Chemistry Secondary Education. <i>Modern Chemistry &amp; Applications</i> , 2017, 05, .	0.2	1
30	Easy Handling of Sensors and Actuators over TCP/IP Networks by Open Source Hardware/Software. <i>Sensors</i> , 2017, 17, 94.	2.1	40
31	HTML5-Based 3-D Online Control Laboratory With Virtual Interactive Wiring Practice. <i>IEEE Transactions on Industrial Informatics</i> , 2018, 14, 2473-2483.	7.2	30
32	Affordances of Virtual and Physical Laboratory Projects for Instructional Design: Impacts on Student Engagement. <i>IEEE Transactions on Education</i> , 2018, 61, 226-233.	2.0	34
33	Fostering student autonomy in English learning through creations in a 3D virtual world. <i>Educational Technology Research and Development</i> , 2018, 66, 693-708.	2.0	43
34	The effects of computer simulation and animation (CSA) on students' cognitive processes: A comparative case study in an undergraduate engineering course. <i>Journal of Computer Assisted Learning</i> , 2018, 34, 71-83.	3.3	8
35	Virtual realization and geometric discriminant algorithm of the industrial robot end-effector's position and orientation. <i>Journal of Discrete Mathematical Sciences and Cryptography</i> , 2018, 21, 471-477.	0.5	3
36	Modular Web-Based Interactive Hybrid Laboratory Framework for Research and Education. <i>IEEE Access</i> , 2018, 6, 20152-20163.	2.6	26

#	ARTICLE	IF	CITATIONS
37	Advanced Topics on Computer Vision, Control and Robotics in Mechatronics. , 2018, , .		2
38	Patient-centric ICTs based healthcare for students with learning, physical and/or sensory disabilities. Telematics and Informatics, 2018, 35, 654-664.	3.5	21
39	A novel intelligent object-oriented three-dimensional simulation system for physics experimentation. Applied Computing and Informatics, 2018, 16, 241-258.	3.7	2
40	3D Visualization Techniques in Health Science Learning. , 2018, , .		10
41	Computer Assisted E-Laboratory using LabVIEW and Internet-of-Things Platform as Teaching Aids in the Industrial Instrumentation Course. International Journal of Online and Biomedical Engineering, 2018, 14, 26.	0.9	10
42	Authenticity, Interactivity, and Collaboration in VR Learning Games. Frontiers in Robotics and AI, 2018, 5, 133.	2.0	10
43	The Higher Education Sustainability through Virtual Laboratories: The Spanish University as Case of Study. Sustainability, 2018, 10, 4040.	1.6	47
44	Virtual Lab Using Markerless Augmented Reality. , 2018, , .		11
45	Epsilon Interactive Virtual User Manual (VUM). , 2018, , .		1
46	m-PaRoLa: a Mobile Virtual Laboratory for Studying the Kinematics of Five-bar and 3RRR Planar Parallel Robots – Work supported by the Spanish Ministries of Education (grant No. FPU13/00413) and Economy (project No. DPI 2016-78361-R).. IFAC-PapersOnLine, 2018, 51, 178-183.	0.5	4
47	Online Virtual Control Laboratory of Mobile Robots. IFAC-PapersOnLine, 2018, 51, 316-321.	0.5	10
48	Three-dimensional Simulation System based Intelligent Object-oriented Paradigm for Conducting Physics Experiments. Procedia Computer Science, 2018, 135, 490-502.	1.2	2
49	ELSA-Py - Open-Source Extension for Communication and Data Management in Interactive Remote Experimentation Under Ilab Shared Architecture. , 2018, , .		4
50	VREdu: A Framework for Interactive Immersive Lectures using Virtual Reality. , 2018, , .		5
51	FTsim: A 3D Tool for Teaching Automation Concepts. , 2018, , .		3
52	Integrated Virtual Laboratory in Engineering Mathematics Education: Fourier Theory. IEEE Access, 2018, 6, 58231-58243.	2.6	40
53	A web-based virtual laboratory for SHRIMP. Computer Applications in Engineering Education, 2018, 26, 1493-1506.	2.2	14
54	Application of Real-World Problems in Computer Science Education. International Journal of Information and Communication Technology Education, 2018, 14, 15-28.	0.8	4

#	ARTICLE	IF	CITATIONS
55	Model Driven Approach for Virtual Lab Authoring - Chemical Sciences Labs. , 2018, , .		2
56	Mixed Reality in Education: Recent Developments and Future Trends. , 2018, , .		13
57	Exploring Immersive Language Learning Using Virtual Reality. , 2018, , 1-21.		2
58	Development of IoT applications in civil engineering classrooms using mobile devices. Computer Applications in Engineering Education, 2018, 26, 1769-1781.	2.2	22
59	Being Bullied in Virtual Environments: Experiences and Reactions of Male and Female Students to a Male or Female Oppressor. Frontiers in Psychology, 2018, 9, 253.	1.1	9
60	Solving Power Balance Problems in Single-Traction Tractors Using PTractor Plus 1.1, a Possible Learning Aid for Students of Agricultural Engineering. Education Sciences, 2018, 8, 68.	1.4	2
61	Virtual Training for Industrial Automation Processes Through Pneumatic Controls. Lecture Notes in Computer Science, 2018, , 516-532.	1.0	14
62	Innovate engineering education by using virtual laboratory platform based industrial robot. , 2018, , .		10
63	A 3D virtual Weftâ€knitting Engineering learning system based on Unreal Engine 4. Computer Applications in Engineering Education, 2018, 26, 2223-2236.	2.2	16
64	Move to Smart Learning Environment: Exploratory Research of Challenges in Computer Laboratory and Design Intelligent Virtual Laboratory for eLearning Technology. Eurasia Journal of Mathematics, Science and Technology Education, 2018, 14, .	0.7	22
65	Haptics Enhanced Interface for Remote Control of Measurement Instrumentation. , 2018, , .		2
66	Virtual reality and situated experiential education: A conceptualization and exploratory trial. Journal of Computer Assisted Learning, 2018, 34, 843-852.	3.3	63
67	Applications of Haptic Systems in Virtual Environments: A Brief Review. , 2018, , 349-377.		3
68	Learning based on 3D photogrammetry models to evaluate the competences in visual testing of welds. , 2018, , .		21
69	Developing a web based interactive 3D virtual environment for novel skin measurement instruments. , 2018, , .		2
70	Virtual and augmented reality effects on K-12, higher and tertiary education studentsâ€™ twenty-first century skills. Virtual Reality, 2019, 23, 425-436.	4.1	158
71	An investigation of motivation and experience in virtual learning environments: a self-determination theory. Education and Information Technologies, 2019, 24, 591-611.	3.5	97
72	Returning after taking a break in online distance higher education: from intention to effective re-enrollment. Interactive Learning Environments, 2019, 27, 307-323.	4.4	14

#	ARTICLE	IF	CITATIONS
73	VR-MOOCs: A Learning Management System for VR Education. , 2019, , .		13
74	Video feedback and e-Learning enhances laboratory skills and engagement in medical laboratory science students. BMC Medical Education, 2019, 19, 310.	1.0	46
75	Head-Mounted Display Virtual Reality in Post-secondary Education and Skill Training. Frontiers in Education, 2019, 4, .	1.2	66
76	Visuospatial Processing for Education in Health and Natural Sciences. , 2019, , .		10
77	Evaluating the impact of the augmented reality learning environment on electronics laboratory skills of engineering students. Computer Applications in Engineering Education, 2019, 27, 1361-1375.	2.2	57
78	Learning methodology based on weld virtual models in the mechanical engineering classroom. Computer Applications in Engineering Education, 2019, 27, 1113-1125.	2.2	15
79	Virtual Environment for Training Oil & Gas Industry Workers. Lecture Notes in Computer Science, 2019, , 379-392.	1.0	4
80	Learning in a Digital World. Smart Computing and Intelligence, 2019, , .	0.7	7
81	A Novel Design of Virtual Laboratory. , 2019, , .		4
82	Strolling through a city of the Roman Empire: an analysis of the potential of virtual reality to teach history in Primary Education. Interactive Learning Environments, 2022, 30, 608-618.	4.4	51
83	Design and Implementation of a Reservation System and a New Queuing for Remote Labs. International Journal of Online and Biomedical Engineering, 2019, 15, 57.	0.9	1
84	Usability and Engagement Study for a Serious Virtual Reality Game of Lunar Exploration Missions. Informatics, 2019, 6, 44.	2.4	10
85	Introducing systems theory with virtual laboratories at the University of Extremadura: How to improve learning in the lab in engineering degrees. International Journal of Electrical Engineering and Education, 2019, , 002072091987681.	0.4	2
86	An Improved Hardware Acceleration Architecture of Binary Neural Network With 1T1R Array Based Forward/Backward Propagation Module. , 2019, , .		2
87	Educational Characteristics of Virtual Simulation in Nursing: An Integrative Review. Clinical Simulation in Nursing, 2019, 37, 18-28.	1.5	72
88	Iterative user and expert feedback in the design of an educational virtual reality biology game. Interactive Learning Environments, 2019, , 1-18.	4.4	12
89	Realization of the Enterprise Value in University-Enterprise Cooperative Talent-Cultivating Mode. , 2019, , .		1
90	PC Builder Hero. , 2019, , .		1

#	ARTICLE	IF	CITATIONS
91	3D Virtual Learning and Measuring Environment for Mechanical Engineering Education. , 2019, , .		6
92	Artificial Intelligence in Intelligent Tutoring Robots: A Systematic Review and Design Guidelines. Applied Sciences (Switzerland), 2019, 9, 2078.	1.3	30
93	Education and STEM on the Web. Human-computer Interaction Series, 2019, , 651-674.	0.4	1
94	An Investigation of Studentsâ€™ Use of a Computational Science Simulation in an Online High School Physics Class. Education Sciences, 2019, 9, 49.	1.4	5
95	Research on 3D Painting in Virtual Reality to Improve Studentsâ€™ Motivation of 3D Animation Learning. Sustainability, 2019, 11, 1605.	1.6	35
96	Student acceptance of virtual laboratory and practical work: An extension of the technology acceptance model. Computers and Education, 2019, 135, 1-14.	5.1	170
97	Technological innovations and practices in engineering education: a review. International Journal on Interactive Design and Manufacturing, 2019, 13, 713-728.	1.3	61
98	Collection-Based Education by Distance and Face to Face: Learning Outcomes and Academic Dishonesty. Journal of Science Education and Technology, 2019, 28, 414-428.	2.4	12
99	Virtual reality laboratories: a review of experiences. International Journal on Interactive Design and Manufacturing, 2019, 13, 947-966.	1.3	64
100	Flipped Classroom Model and Immersive Learning in The Mechanical Engineering Education. , 2019, , .		4
101	A literature review of trend in engineering education's online laboratory-based tool, the past, now and its future since evolution of standards. , 2019, , .		0
102	Deployment of a Software to Simulate Control Systems in the State-Space. Electronics (Switzerland), 2019, 8, 1205.	1.8	5
103	What Does the Pedagogical Agent Say?. , 2019, , .		1
104	Collaborative Technological Process Planning with 5G Mobile Networks and Digital Tools: Manufacturing Environments' Perspective. , 2019, , .		5
105	A Cloud-based Virtual Experiment Platform for Computer Hardware Teaching. , 2019, , .		1
106	Challenges of Online Higher Education in the Face of the Sustainability Objectives of the United Nations: Carbon Footprint, Accessibility and Social Inclusion. Sustainability, 2019, 11, 5580.	1.6	28
107	Review TVET learning innovation: Augmented reality technology for virtual 3D laboratory. Journal of Physics: Conference Series, 2019, 1402, 077062.	0.3	4
108	Meaningful Learning Through Virtual Reality Learning Environments: A Case Study in Materials Engineering. Applied Sciences (Switzerland), 2019, 9, 4625.	1.3	43

#	ARTICLE	IF	CITATIONS
109	Online Undergraduate Laboratories in Electrical Engineering. , 2019, , .		7
110	Designing MOOCS with Virtual Microscopic Simulation (VMS) for increasing of studentâ€™s levels of understanding. Journal of Physics: Conference Series, 2019, 1402, 066094.	0.3	6
111	Performance Impact of Simulation-Based Virtual Laboratory on Engineering Students: A Case Study of Australia Virtual System. IEEE Access, 2019, 7, 177387-177396.	2.6	23
112	FIRST RESULTS FROM A STUDY ON THE EFFICACY OF USING VIRTUAL REALITY (VR) TO TEACH TRUSS MECHANICS. Proceedings of the Canadian Engineering Education Association (CEEAA), 0, , .	0.2	1
113	Enter the Serious E-scape Room: A Cost-Effective Serious Game Model for Deep and Meaningful E-learning. , 2019, , .		27
114	Challenges and opportunities of using virtual laboratory in teaching biodiversity and classification. AIP Conference Proceedings, 2019, , .	0.3	1
115	Creativity in Digital Reality / <i>Creatividad en la realidad digital</i>. Estudios De Psicología, 2019, 40, 585-607.	0.1	4
116	PACA-ITS: A Multi-Agent System for Intelligent Virtual Laboratory Courses. Applied Sciences (Switzerland), 2019, 9, 5084.	1.3	4
117	The Role of Virtual Reality in Autonomous Vehiclesâ€™ Safety. , 2019, , .		19
118	Analysis of the Productive, Structural, and Dynamic Development of Augmented Reality in Higher Education Research on the Web of Science. Applied Sciences (Switzerland), 2019, 9, 5306.	1.3	43
119	Integration of Virtual Reality in Secondary STEM Education. , 2019, , .		20
120	Mitigating the urbanâ€™rural educational gap in developing countries through mobile technologyâ€™supported learning. British Journal of Educational Technology, 2019, 50, 735-749.	3.9	15
121	Is Multimedia Multisensorial? - A Review of Mulsemedia Systems. ACM Computing Surveys, 2019, 51, 1-35.	16.1	52
122	Embedding immersive virtual reality in classrooms: Ethical, organisational and educational lessons in bridging research and practice. International Journal of Child-Computer Interaction, 2019, 19, 19-29.	2.5	104
123	The potential of implementing augmented reality into vocational higher education through mobile learning. Interactive Learning Environments, 2020, 28, 404-418.	4.4	32
124	Gameâ€™Based Learning in Virtual Worlds: A Multiuser Online Game for Medical Undergraduate Radiology Education within Second Life. Anatomical Sciences Education, 2020, 13, 602-617.	2.5	44
125	Technologies for the future of learning: state of the art. International Journal on Interactive Design and Manufacturing, 2020, 14, 683-695.	1.3	48
126	Real-Time Interaction and Cost Estimating within Immersive Virtual Environments. Journal of Construction Engineering and Management - ASCE, 2020, 146, .	2.0	26



#	ARTICLE	IF	CITATIONS
127	A Derivation of Factors Influencing the Diffusion and Adoption of an Open Source Learning Platform. Sustainability, 2020, 12, 7532.	1.6	21
128	The effects of combining virtual laboratory and advanced technology research laboratory on university studentsâ€™ conceptual understanding of electron microscopy. Interactive Learning Environments, 2023, 31, 1126-1141.	4.4	10
129	Using process simulators in Chemical Engineering education: Is it possible to minimize the "black box" effect?. Computer Applications in Engineering Education, 2020, 28, 1369-1385.	2.2	7
130	A Learning Analytics Theoretical Framework for STEM Education Virtual Reality Applications. Education Sciences, 2020, 10, 317.	1.4	27
131	Study on the Reform of the Physics Experimental Teaching in University Based on Virtual Reality Technology. , 2020, , .		0
132	Teaching forward kinematics in a robotics course using simulations: transfer to a real-world context using LEGO mindstormsâ„¢. International Journal on Interactive Design and Manufacturing, 2020, 14, 773-787.	1.3	9
133	Digital Twins in Extended Reality for Control System Applications. , 2020, , .		16
134	Experimental Design of the Mechanical Design Course in Distance Education. , 2020, , .		3
135	Modified Blended Learning in Engineering Higher Education during the COVID-19 Lockdownâ€”Building Automation Courses Case Study. Education Sciences, 2020, 10, 292.	1.4	71
136	Unified 3-D Interactive Human-Centered System for Online Experimentation: Current Deployment and Future Perspectives. IEEE Transactions on Industrial Informatics, 2021, 17, 4777-4787.	7.2	27
137	Real Or Not Real: The Impact of the Physical Fidelity of Virtual Learning Resources on Learning Anatomy. Anatomical Sciences Education, 2021, 14, 774-787.	2.5	9
138	The role of MOOCs in engineering education: An exploratory systematic review of peer-reviewed literature. Computer Applications in Engineering Education, 2021, 29, 950-968.	2.2	10
139	Opinion piece: non-traditional practical work for traditional campuses. Higher Education Pedagogies, 2020, 5, 210-222.	2.1	1
140	Evaluation of an immersive virtual learning environment for operator training in mechanical and plant engineering using video analysis. British Journal of Educational Technology, 2020, 51, 2159-2179.	3.9	11
141	The Characteristics of Virtual Reality Usage in Educational Systems. , 2020, , .		1
142	A Scoping Review of Immersive Virtual Reality in STEM Education. IEEE Transactions on Learning Technologies, 2020, 13, 748-761.	2.2	127
143	A Student Primer on How to Thrive in Engineering Education during and beyond COVID-19. Education Sciences, 2020, 10, 236.	1.4	36
144	Virtual University Education is an Environment without Losing its Essence in the Teaching and Learning Spaces. , 2020, , .		2

#	ARTICLE	IF	CITATIONS
145	Virtual Reality as a tool for learning: The past, present and the prospect. Journal of Applied Learning & Teaching, 2020, 3, .	0.3	2
146	Probing Physical Sciences Teachers' Chemical Laboratory Safety Awareness in Some South African High Schools. African Journal of Research in Mathematics, Science and Technology Education, 2020, 24, 423-434.	0.2	1
147	Analysis of quantity and quality the implementation of high school chemical practicum in Semarang city. Journal of Physics: Conference Series, 2020, 1567, 042011.	0.3	0
148	Robotics vs. Game-Console-Based Platforms to Learn Computer Architecture. IEEE Access, 2020, 8, 95153-95169.	2.6	4
149	Virtual and mixed reality in the study of the geometry of the crystal lattice. Journal of Physics: Conference Series, 2020, 1515, 022001.	0.3	8
150	Immersive virtual crude distillation unit learning experience: The EYE4EDU project. Computers and Chemical Engineering, 2020, 140, 106973.	2.0	8
151	Virtual reality is more efficient in learning human heart anatomy especially for subjects with low baseline knowledge. New Ideas in Psychology, 2020, 59, 100786.	1.2	47
152	Trend Analysis on Adoption of Virtual and Augmented Reality in the Architecture, Engineering, and Construction Industry. Data, 2020, 5, 26.	1.2	106
153	Augmented Reality and Virtual Reality. Progress in IS, 2020, , .	0.5	16
154	Teacher Educators' Appropriation of TPACK-SAMR Models for 21st Century Pre-Service Teacher Preparation. International Journal of Information and Communication Technology Education, 2020, 16, 126-140.	0.8	13
155	An interactive simulation-based game of a manufacturing process in heavy industry. Entertainment Computing, 2020, 34, 100343.	1.8	6
156	Study on enhancing AIoT computational thinking skills by plot image-based VR. Interactive Learning Environments, 2021, 29, 482-495.	4.4	32
157	Developing critical thinking in <sc>STEM</sc> education through inquiry-based writing in the laboratory classroom. Biochemistry and Molecular Biology Education, 2021, 49, 140-150.	0.5	6
158	Virtual Laboratories in Undergraduate Science and Engineering Courses: a Systematic Review, 2009-2019. Journal of Science Education and Technology, 2021, 30, 16-30.	2.4	48
159	Web-Based Virtual Lab for Learning Design, Operation, Control, and Optimization of an Anaerobic Digestion Process. Journal of Science Education and Technology, 2021, 30, 319-330.	2.4	12
160	Laboratory Learning Objectives Measurement: Relationships Between Student Evaluation Scores and Perceived Learning. IEEE Transactions on Education, 2021, 64, 163-171.	2.0	13
161	Research and application of the virtual simulation system teaching method in copper pyrometallurgy. International Journal of Modeling, Simulation, and Scientific Computing, 2021, 12, 2050064.	0.9	1
162	Cultivating creative thinking in engineering student teams: Can a computer-mediated virtual laboratory help?. Journal of Computer Assisted Learning, 2021, 37, 587-601.	3.3	15

#	ARTICLE	IF	CITATIONS
163	Virtual Laboratory: A Boon to the Mechanical Engineering Education During Covid-19 Pandemic. Higher Education for the Future, 2021, 8, 31-46.	10.2	68
164	Visualization and ecohydrologic models: Opening the box. Hydrological Processes, 2021, 35, .	1.1	8
165	Exploring participant engagement during an astrophysics virtual reality experience at a science festival. International Journal of Science Education, Part B: Communication and Public Engagement, 2021, 11, 17-34.	0.9	16
166	Virtual reality learning environment for enhancing electronics engineering laboratory experience. Computer Applications in Engineering Education, 2021, 29, 229-243.	2.2	55
167	Challenges and Research in Virtual Worlds and Augmented Reality in the Educational Field. Advances in Educational Technologies and Instructional Design Book Series, 2021, , 373-393.	0.2	0
168	Cross Reality (XR): Challenges and Opportunities Across the Spectrum. SpringerBriefs in Statistics, 2021, , 55-77.	0.3	34
169	Learning experiences from digital laboratory safety training. Education for Chemical Engineers, 2021, 34, 87-93.	2.8	27
170	Interactive learning in the classroom: A mobile augmented reality assistance application for learning. Computer Animation and Virtual Worlds, 0, , .	0.7	3
171	E-Learning Ecosystems to Implement Virtual Computer Labs. Communications in Computer and Information Science, 2021, , 77-89.	0.4	4
172	Scientific production and thematic breakthroughs in smart learning environments: a bibliometric analysis. Smart Learning Environments, 2021, 8, .	4.3	95
174	Teaching Chemistry with Arduino Experiments in a Mixed Virtual-Physical Learning Environment. Journal of Science Education and Technology, 2021, 30, 550-566.	2.4	14
175	Distance Learning. Advances in Mobile and Distance Learning Book Series, 2021, , 43-77.	0.4	2
176	Opportunities in Virtual Laboratory Experiments in the Teaching and Learning Process. Advances in Educational Technologies and Instructional Design Book Series, 2021, , 227-245.	0.2	0
177	Analysis of Problem in Utilizing School Laboratories in the Chemistry Learning. , 0, , .		0
178	Skills for a Working Future: How to Bring about Professional Success from the Educational Setting. Education Sciences, 2021, 11, 27.	1.4	17
179	Enhancing teaching and research skills in metal casting through a virtual casting lab. Engineering Reports, 2021, 3, e12362.	0.9	0
180	Distance Learning in Chemical Engineering. Advances in Mobile and Distance Learning Book Series, 2021, , 118-148.	0.4	1
181	Immersive Virtual Reality in K-12 and Higher Education: A systematic review of the last decade scientific literature. Virtual Reality, 2021, 25, 835-861.	4.1	129

#	ARTICLE	IF	CITATIONS
182	Examining Teachers' Use of Learning Information Systems (LIS) of the Basic Education Schools in the Philippines Using Structural Equation Modeling. <i>International Journal of Enterprise Information Systems</i> , 2021, 17, 69-84.	0.6	1
183	USE OF VIRTUAL REALITY TECHNOLOGIES IN EDUCATION. <i>Continuing Professional Education Theory and Practice</i> , 2021, , 40-47.	0.1	3
184	An Investigation of South African Pre-service Teachers' Use of Simulations in Virtual Physical Sciences Learning: Process, Attitudes and Reflections. <i>Gaming Media and Social Effects</i> , 2021, , 81-99.	0.7	2
185	Role of Virtual Laboratories in Teaching Learning Processes of India. <i>Advances in Educational Technologies and Instructional Design Book Series</i> , 2021, , 235-252.	0.2	0
186	Towards a Conceptual Model for Consideration of Adverse Effects of Immersive Virtual Reality for Individuals with Autism. <i>Lecture Notes in Computer Science</i> , 2021, , 333-342.	1.0	0
187	Bibliometric analysis of the term "STEM module". <i>IOP Conference Series: Materials Science and Engineering</i> , 2021, 1098, 032031.	0.3	2
188	Analysis stage in the development of a virtual laboratory electric motor installation for vocational high schools. <i>Journal of Physics: Conference Series</i> , 2021, 1833, 012067.	0.3	1
189	Three-dimensional modeled environments versus 360 degree panoramas for mobile virtual reality training. <i>Virtual Reality</i> , 2022, 26, 571-581.	4.1	19
190	Advanced Controllers for Level and Temperature Process Applied to Virtual Festo MPSA® PA Workstation. , 2021, , .		6
191	Learning in Virtual Reality: Bridging the Motivation Gap by Adding Annotations. <i>Frontiers in Psychology</i> , 2021, 12, 645032.	1.1	12
192	Using virtual reality to facilitate learners' creative self-efficacy and intrinsic motivation in an EFL classroom. <i>Education and Information Technologies</i> , 2021, 26, 4487-4505.	3.5	51
193	A Learning Analytics Conceptual Framework for Augmented Reality-Supported Educational Case Studies. <i>Multimodal Technologies and Interaction</i> , 2021, 5, 9.	1.7	15
194	Design and Implementation of a Virtual Laboratory for Physics Subjects in Moroccan Universities. <i>Sustainability</i> , 2021, 13, 3711.	1.6	35
195	The development of prototype virtual laboratory through biology, technology, engineering, and mathematics (BTEM). <i>Journal of Physics: Conference Series</i> , 2021, 1806, 012171.	0.3	3
196	Evaluation of an Inquiry-Based Virtual Lab for Junior High School Science Classes. <i>Journal of Educational Computing Research</i> , 2022, 59, 1579-1600.	3.6	9
197	Technology implementation to promote digital learning. <i>IOP Conference Series: Materials Science and Engineering</i> , 2021, 1098, 032006.	0.3	1
198	¿Laboratorios experimentales en la educación a distancia? Una alternativa práctica empleando Graasp y Go-Lab. <i>Revista Mexicana De Bachillerato A Distancia</i> , 2021, 13, .	0.1	1
199	Utilizing Simtronics SPM 700 distillation in engineering unit operation laboratory. <i>Interactive Learning Environments</i> , 0, , 1-11.	4.4	0

#	ARTICLE	IF	CITATIONS
200	Massive Open Online Simulation (MOOS) of physics concepts microscopic for improving creative thinking. Journal of Physics: Conference Series, 2021, 1869, 012181.	0.3	1
201	sBotics - Gamified Framework for Educational Robotics. Journal of Intelligent and Robotic Systems: Theory and Applications, 2021, 102, 17.	2.0	7
202	Incorporation of Modeling, Simulation, and Game-Based Learning in Engineering Dynamics Education towards Improving Vehicle Design and Driver Safety. Safety, 2021, 7, 30.	0.9	3
203	Traditional vs. virtual laboratories in health sciences education. Journal of Biological Education, 2023, 57, 36-50.	0.8	6
204	Teaching method of designing experiment from the perspective of teacher in power electronics course. IET Circuits, Devices and Systems, 2022, 16, 53-63.	0.9	1
205	Digitalisation of Teaching and Learning as a Tool for Increasing Students' Satisfaction and Educational Efficiency: Using Smart Platforms in EFL. Sustainability, 2021, 13, 4892.	1.6	9
206	Technological Aspects for Pleasant Learning: A Review of the Literature. Informatics, 2021, 8, 25.	2.4	1
207	Transforming traditional teaching laboratories for effective remote delivery—A review. Education for Chemical Engineers, 2021, 35, 96-104.	2.8	41
208	The Use of Virtual Reality in the Teaching of Challenging Concepts in Virology, Cell Culture and Molecular Biology. Frontiers in Virtual Reality, 2021, 2, .	2.5	7
209	An integrated numerical visualization teaching approach for an undergraduate course, Flow in Porous Media: An attempt toward sustainable engineering education. Computer Applications in Engineering Education, 2021, 29, 1836-1856.	2.2	7
210	Review of Articles Related to Mixed Reality in Education. Journal of Teacher Education and Lifelong Learning; 0, , .	0.3	1
211	A team-based competition for undergraduate medical students to learn radiology within the virtual world Second Life. Insights Into Imaging, 2021, 12, 89.	1.6	19
212	The Potential of Using an Eye Tracker in Architectural Education: Three Perspectives for Ordinary Users, Students and Lecturers. Buildings, 2021, 11, 245.	1.4	10
213	The Higher Education Sustainability before and during the COVID-19 Pandemic: A Spanish and Ecuadorian Case. Sustainability, 2021, 13, 6363.	1.6	23
214	“Metaverses Like ‘m Really There’: Using VR Experiences for STEM Career Development. Journal of Science Education and Technology, 2021, 30, 877-888.	2.4	9
215	Virtual reality in chemical and biochemical engineering education and training. Education for Chemical Engineers, 2021, 36, 143-153.	2.8	52
216	Exploring Immersive Technology in Education for Smart Cities. EAI/Springer Innovations in Communication and Computing, 2022, , 1-25.	0.9	2
217	GeoForge: investigating integrated virtual reality and personalized websites for collaboration in middle school science. Information and Learning Science, 2021, 122, 546-564.	0.8	7

#	ARTICLE	IF	CITATIONS
218	Adoption of virtual reality technology in higher education: An evaluation of five teaching semesters in a purpose-designed laboratory. <i>Education and Information Technologies</i> , 2022, 27, 1287-1305.	3.5	91
219	LAB Theory, HLAB Pedagogy, and Review of Laboratory Learning in Chemistry during the COVID-19 Pandemic. <i>Journal of Chemical Education</i> , 2021, 98, 2496-2517.	1.1	54
220	Creating Serious STEM Games by combining a Game Platform and Mathematical Software. , 2021, , .		0
221	Analysis of Cooperative Skills Development through Relational Coordination in a Gamified Online Learning Environment. <i>Electronics (Switzerland)</i> , 2021, 10, 2032.	1.8	10
222	Análise bibliométrica sobre o uso de aplicativos e tecnologias móveis no ensino dos processos de separação na Engenharia Química. <i>Research, Society and Development</i> , 2021, 10, e39101119155.	0.0	1
223	Engineering Lab in Immersive VR – An Embodied Approach to Training Wafer Preparation. <i>Journal of Educational Computing Research</i> , 2022, 60, 455-480.	3.6	5
224	Educational trends post COVID-19 in engineering: Virtual laboratories. <i>Materials Today: Proceedings</i> , 2022, 49, 155-160.	0.9	44
225	Emulation of Circuits under Test Using Low-Cost Embedded Platforms. <i>Electronics (Switzerland)</i> , 2021, 10, 1990.	1.8	2
226	Impact of compulsory participation of medical students in a multiuser online game to learn radiological anatomy and radiological signs within the virtual world Second Life. <i>Anatomical Sciences Education</i> , 2022, 15, 863-876.	2.5	13
227	The Influence of Technology on Mental Well-Being of STEM Teachers at University Level: COVID-19 as a Stressor. <i>International Journal of Environmental Research and Public Health</i> , 2021, 18, 9605.	1.2	12
229	A Virtual-Lab Tool for Teaching the Fundamentals of a DC Motor-Generator Operation using Excel-VBA. <i>International Journal of Computer Applications</i> , 2021, 183, 1-8.	0.2	1
230	Teaching With Hapkit: Enabling Online Haptics Courses With Hands-On Laboratories. <i>IEEE Robotics and Automation Magazine</i> , 2021, 28, 79-91.	2.2	3
231	Assessing Psychomotor Domain in Civil Engineering Design Project During Pandemic. <i>International Journal of Service Management and Sustainability</i> , 2021, 6, 77.	0.0	1
232	Lecturers'™ Experiences in Teaching Using VR Resources at a Selected University, South Africa. , 0, , .		1
233	Are virtual physiology laboratories effective for student learning? A systematic review. <i>American Journal of Physiology - Advances in Physiology Education</i> , 2021, 45, 467-480.	0.8	17
234	Blueprint to design virtual experiment environments. <i>Computers and Education Open</i> , 2021, 2, 100039.	2.6	4
235	A contribution to innovation in the field of microprocessor systems: Evaluation of the use of SIMRA simulator in teaching. <i>Tehnika</i> , 2021, 76, 61-69.	0.0	0
236	Virtual Festo MPS® PA Workstation for Level and Temperature Process Control. <i>Lecture Notes in Electrical Engineering</i> , 2021, , 164-180.	0.3	1

#	ARTICLE	IF	CITATIONS
237	The Role of Physical and Computer-Based Experiences in Learning Science Using a Complex Systems Approach. <i>Science and Education</i> , 2021, 30, 717-753.	1.7	1
238	Exploiting VR and AR Technologies in Education and Training to Inclusive Robotics. <i>Studies in Computational Intelligence</i> , 2021, , 115-126.	0.7	0
239	Experiment Information System Based on an Online Virtual Laboratory. <i>Future Internet</i> , 2021, 13, 27.	2.4	12
240	Enhancing EJS with Extension Plugins. <i>Electronics (Switzerland)</i> , 2021, 10, 242.	1.8	6
241	Teaching English Word Order with CorrectWriting Software. <i>Lecture Notes in Computer Science</i> , 2021, , 681-692.	1.0	2
243	Virtual Reality as a Factor to Improve Productivity in Learning Processes. <i>Advances in Intelligent Systems and Computing</i> , 2020, , 762-768.	0.5	3
244	The Potential of Game Development Platforms for Digital Twins and Virtual Labs. <i>IFIP Advances in Information and Communication Technology</i> , 2020, , 117-121.	0.5	6
245	Systems to Support Co-creative Collaboration in Mixed-Reality Environments. <i>Smart Computing and Intelligence</i> , 2017, , 157-178.	0.7	4
246	MaroonVR – An Interactive and Immersive Virtual Reality Physics Laboratory. <i>Smart Computing and Intelligence</i> , 2019, , 213-238.	0.7	9
247	The remote laboratory VISIR - Introducing online laboratory equipment in electrical engineering classes. , 2020, , .		16
248	Implementation of Microgrid Virtual Laboratory in a Design Course in Electrical Engineering. , 2020, , .		12
249	The proliferation of virtual laboratories in educational fields. <i>Advances in Distributed Computing and Artificial Intelligence Journal</i> , 2020, 9, 85-97.	1.1	21
250	Factors affecting Chinese university students' intention to continue using virtual and remote labs. <i>Australasian Journal of Educational Technology</i> , 2020, 36, 169-185.	2.0	7
251	Virtual Reality: Development of an Integrated Learning Environment for Education. <i>International Journal of Information and Education Technology</i> , 2020, 10, 171-175.	0.9	22
252	STEM education supported by virtual laboratory incorporated in self-directed learning process. <i>Journal of Electrical Engineering</i> , 2019, 70, 332-344.	0.4	10
253	Covid-19 revolutionising higher education: An educator's viewpoint of the challenges, benefits and the way forward. <i>Life Sciences Medicine and Biomedicine</i> , 2020, 4, .	0.1	5
254	Virtual Reality Laboratories: A Way Forward for Schools?. <i>Eurasia Journal of Mathematics, Science and Technology Education</i> , 2020, 16, em1856.	0.7	18
255	Engineering Students' Readiness to Transition to Emergency Online Learning in Response to COVID-19: Case of Qatar. <i>Eurasia Journal of Mathematics, Science and Technology Education</i> , 2020, 16, em1886.	0.7	39

#	ARTICLE	IF	CITATIONS
256	The Potential of Using Google Expeditions and Google Lens Tools under STEM-education in Ukraine. , 0, 51, 90-101.	0.2	2
257	Prospects for digital technology in Higher education: an expert View. Vestnik NSUEM, 2020, , 10-29.	0.1	1
259	Future Direction of Gamification Within Higher Education. , 0, , 1721-1741.		3
260	How Mobile Augmented Reality Is Applied in Education? A Systematic Literature Review. Creative Education, 2019, 10, 1589-1627.	0.2	13
261	Analysis of the Educational Impact of M-Learning and Related Scientific Research. Journal of New Approaches in Educational Research, 2020, 9, 167.	2.1	11
262	Game-Based Learning for Engineering Education. , 2021, , .		2
263	Risks in Adolescent Adjustment by Internet Exposure: Evidence From PISA. Frontiers in Psychology, 2021, 12, 763759.	1.1	2
264	Virtual Microscopic Simulation (VMS) for physics learning of the photoelectric effect in high school. Journal of Physics: Conference Series, 2021, 2019, 012013.	0.3	0
265	VRML virtual reality technology applied in the mechanical design. , 2017, , .		0
266	Transferability of Voice Communication in Games to Virtual Teams Training for Crisis Management. International Journal of Sociotechnology and Knowledge Development, 2017, 9, 1-25.	0.4	3
267	Evaluation of the WEB platform as a learning tool in Mechanical Engineering. , 2017, , .		0
268	Extended Field Trials of a Mixed-Reality Teaching Environment: Practical Issues Beyond the Technology. Communications in Computer and Information Science, 2017, , 14-24.	0.4	0
269	Desarrollo de un entorno virtual para la simulaci3n de maniobras el3ctricas en subestaciones: un caso pr3ctico. Ingenier3a Solidaria, 2017, 13, 55-84.	0.1	2
270	Perceptions of pre-service teachers about a Science Lab developed in OpenSim. International Journal for Innovation Education and Research, 2017, 5, 71-94.	0.0	0
271	Future Direction of Gamification Within Higher Education. Advances in Educational Technologies and Instructional Design Book Series, 2018, , 120-149.	0.2	0
272	Analysis of Users in an Immersive Environment for Teaching Science. Advances in Educational Technologies and Instructional Design Book Series, 2018, , 149-173.	0.2	0
273	Modern Online Learning Tools Over the Platform of Virtual/Augmented Reality. Advances in Educational Technologies and Instructional Design Book Series, 2018, , 101-126.	0.2	0
274	Building an Online Interactive 3D Virtual World for AquaFlux and Epsilon. Advances in Science, Technology and Engineering Systems, 2018, 3, 501-514.	0.4	1



#	ARTICLE	IF	CITATIONS
275	Teaching Sciences in Virtual Worlds with Mastery Learning: A Case of Study in Elementary School. International Journal of Advanced Engineering Research and Science, 2018, 5, 191-211.	0.0	0
276	Multimodal Data Representation Models for Virtual, Remote, and Mixed Laboratories Development. Lecture Notes in Networks and Systems, 2019, , 559-569.	0.5	4
277	Combining Virtual and Remote Interactive Labs and Visual/Textual Programming: The Furuta Pendulum Experience. Lecture Notes in Networks and Systems, 2019, , 100-109.	0.5	0
278	A Design of Computer Generated Environment for Learning Among Agriculture Students at the University of Ilorin, Ilorin, Nigeria. Advances in Multidisciplinary & Scientific Research Journal Publication, 2018, 4, 1-18.	0.0	1
279	Virtual lab for artificial intelligence controllers based speed control for induction motor. European Journal of Science and Technology, 0, , 29-36.	0.5	0
280	Remote Virtual Laboratory of Control System Based on Cloud Platform. Modeling and Simulation, 2019, 08, 95-101.	0.0	0
281	COLLABORATIVE TECHNOLOGIES IN EDUCATION: HOW TO BUILD AN EFFECTIVE SYSTEM FOR BLENDED LEARNING?. University Management: Practice and Analysis, 2019, 23, 101-110.	0.4	1
282	Development of Virtual Laboratory Works for Technical and Computer Sciences. Communications in Computer and Information Science, 2019, , 383-394.	0.4	5
283	Interactive Science Multimedia and Visuospatial Processing. , 2019, , 145-173.		12
284	Virtual Simulation Based Intercultural Learning. Lecture Notes in Computer Science, 2019, , 492-504.	1.0	0
285	Towards a Magic Cube Framework in Understanding Higher Education 4.0 Imperative for the Fourth Industrial Revolution. Advances in Higher Education and Professional Development Book Series, 2019, , 107-130.	0.1	2
286	Analysis of Users in an Immersive Environment for Teaching Science. , 2019, , 1-25.		0
287	Laboratorios reales versus laboratorios virtuales en las carreras de ciencias de la computación. IE Revista De Investigación Educativa De La REDIECH, 2019, 10, 9-22.	0.3	4
289	The Virtual Machine Learning Laboratory with Visualization of Algorithms Execution Process. Smart Innovation, Systems and Technologies, 2020, , 221-230.	0.5	0
290	The Role of Visualization in Mathematics and its Implementation in Nomotex DLS. ITM Web of Conferences, 2020, 35, 03007.	0.4	0
291	Designing MOOCs with VMS (Virtual Microscopic Simulation) for Measurement Student's Level Understanding (LU). JPPPF: Jurnal Penelitian & Pengembangan Pendidikan Fisika, 2020, 6, 17-24.	0.1	1
292	Integración de las TIC para la enseñanza de las Ciencias Morfológicas en la Universidad: principales aplicaciones utilizadas y valoraciones de docentes y alumnos.. Unipluriversidad, 2020, 20, e2020103.	0.3	0
293	Theoretical Foundations of Virtual and Augmented Reality-Supported Learning Analytics. , 2020, , .		1

#	ARTICLE	IF	CITATIONS
294	Work in Progress: Pilot Study for the Effect of a Simulated Laboratories on the Motivation of Biological Engineering Students. <i>Advances in Intelligent Systems and Computing</i> , 2021, , 429-436.	0.5	1
295	Multimodal Data Representation Based on Multi-image Concept for Immersive Environments and Online Labs Development. <i>Advances in Intelligent Systems and Computing</i> , 2021, , 205-222.	0.5	1
296	Software System for Virtual Laboratory Works. , 2020, , .		5
297	Mulsemedia Data Representation Based on Multi-image Concept. <i>Advances in Intelligent Systems and Computing</i> , 2021, , 480-491.	0.5	0
298	ASSESSING PRE-SERVICE TEACHERSâ€™ RECEPTION AND ATTITUDES TOWARDS VIRTUAL LABORATORY EXPERIMENTS IN LIFE SCIENCES. <i>Journal of Baltic Science Education</i> , 2020, 19, 1092-1105.	0.4	3
299	Application of Virtual Laboratory assisted Discovery Learning Model to Improve Science Process Skills and Learning Outcomes in Circulatory System Material. <i>Jurnal Penelitian Pendidikan IPA</i> , 2020, 7, 34-40.	0.1	2
300	How Cloud Frameworks Support Blended Learning Environments. <i>Advances in Educational Technologies and Instructional Design Book Series</i> , 2020, , 114-136.	0.2	0
301	Visual-geometric Representation of Theorem Proofs in Nomotex DLS. <i>ITM Web of Conferences</i> , 2020, 35, 03009.	0.4	0
302	Automation of Checking Math Tasks on the Analytical Geometry Nomotex E-course. <i>ITM Web of Conferences</i> , 2020, 35, 03006.	0.4	0
303	State Space Model Based Control in Virtual Laboratory. , 2019, , .		5
304	Teachersâ€™ Opinions About Virtual Reality Technology in School-based Agricultural Education. <i>Journal of Agricultural Education</i> , 2020, 61, 92-109.	0.1	6
305	Evaluation of an Interactive Personalised Virtual Lab in Secondary Schools. <i>Communications in Computer and Information Science</i> , 2020, , 538-556.	0.4	1
306	Transferability of Voice Communication in Games to Virtual Teams Training for Crisis Management. , 2020, , 399-433.		0
307	Virtual Laboratory to Face New Challenges in the Industry. <i>Advances in Educational Technologies and Instructional Design Book Series</i> , 2020, , 114-129.	0.2	0
308	The Effect of Virtual Reality Technology on Welding Skill Performance. <i>Journal of Agricultural Education</i> , 2020, 61, 152-171.	0.1	14
309	Using Virtual Reality as a Cost-Effective Substitute for Engineering Labs in Underdeveloped Countries. <i>Communications in Computer and Information Science</i> , 2020, , 389-401.	0.4	2
310	Towards a Taxonomy of Virtual Reality Usage in Education: A Systematic Review. <i>Progress in IS</i> , 2020, , 283-296.	0.5	5
311	3D Virtual Environments to Support New Product Development: A Mobile Platform Based on an Open Innovation Laboratory Applied in Higher Education. <i>Lecture Notes in Computer Science</i> , 2020, , 483-496.	1.0	1

#	ARTICLE	IF	CITATIONS
312	Implantation of Digital Technology in Engineering Education as an Example of Study at Bauman Moscow State Technical University Discipline "Technology of Construction Materials" ITM Web of Conferences, 2020, 35, 01022.	0.4	4
314	El proyecto Go-Lab como entorno virtual de aprendizaje: análisis y futuro. Educar, 2020, 56, 407-421.	0.2	2
315	The Implementation of Virtual Labs in Aerospace Structures Education. , 0, , .		2
316	Virtual reality technologies in the educational process: Prospects and dangers. Informatics and Education, 2020, , 4-16.	0.2	1
317	Animation and interactivity in computer-based physics experiments to support the documentation of measured vector quantities in diagrams: An eye tracking study. Physical Review Physics Education Research, 2020, 16, .	1.4	9
318	Virtual Reality Environments as a Strategy to Improve Processes Productivity. , 2020, , .		4
319	Structural Model of Training Bachelors in Electrical Engineering in the Online Learning Environment. , 2021, , .		3
320	Bare-metal hypervisor virtual servers with a custom-built automatic scheduling system for educational use. , 2021, , .		0
321	Immersive Virtual Reality in K-12 and Outcomes: A Meta-analysis. , 2021, , .		0
322	Effectiveness of Virtual Laboratories in Science Education: A Meta-Analysis. International Journal of Information and Education Technology, 2022, 12, 150-156.	0.9	7
323	Customized Online Laboratory Experiments: A General Tool and Its Application to the Furuta Inverted Pendulum [Focus on Education]. IEEE Control Systems, 2019, 39, 75-87.	1.0	24
324	Introducing knowledge based augmented reality environment in engineering learning - a comparative study. , 2020, , .		0
326	Online teaching and learning experience at South African higher educational institution. , 2021, , .		0
327	Virtual reality for developing intercultural communication competence in Mandarin as a Foreign language. Educational Technology Research and Development, 2022, 70, 615-638.	2.0	10
328	The mainstream and extension of contemporary virtual reality education research: Insights from a co-citation network analysis (2015"2020). Educational Technology Research and Development, 2022, 70, 169-184.	2.0	14
329	AViLab" Gamified Virtual Educational Tool for Introduction to Agent Theory Fundamentals. Electronics (Switzerland), 2022, 11, 344.	1.8	4
331	CMAR: A Conceptual Framework for Designing Mobile Augmented Reality Learning Module for Construction Measurement. Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, 2022, , 372-382.	0.2	0
332	Case of Study in Online Course of Computer Engineering during COVID-19 Pandemic. Electronics (Switzerland), 2022, 11, 578.	1.8	5

#	ARTICLE	IF	CITATIONS
333	Study of Virtual Reality Immersive Technology Enhanced Mathematics Geometry Learning. <i>Frontiers in Psychology</i> , 2022, 13, 760418.	1.1	23
334	De la Realidad Extendida al Metaverso: una reflexión crítica sobre las aportaciones a la educación. <i>Teoría De La Educación</i> , 2022, 34, 189-208.	0.6	12
335	A co-creation experiment for virtual laboratories of mechanics in engineering education. <i>Computer Applications in Engineering Education</i> , 2022, 30, 991-1008.	2.2	3
336	A Game-Based Learning Approach in Digital Design Course to Enhance Students' Competency. <i>Information (Switzerland)</i> , 2022, 13, 177.	1.7	7
337	Implementation of the Modern Immersive Learning Model CPLM. <i>Applied Sciences (Switzerland)</i> , 2022, 12, 3090.	1.3	4
338	Virtual labs for the study of enzymatic stirred tank bioreactors. <i>Computer Applications in Engineering Education</i> , 0, , .	2.2	1
339	Rapid transition of traditionally hands-on labs to online instruction in engineering courses. <i>European Journal of Engineering Education</i> , 2023, 48, 842-860.	1.5	14
340	Geography Education in a Collaborative Virtual Environment: A Qualitative Study on Geography Teachers. <i>ISPRS International Journal of Geo-Information</i> , 2022, 11, 180.	1.4	6
341	A multimodal analysis of college students' collaborative problem solving in virtual experimentation activities: a perspective of cognitive load. <i>Journal of Computing in Higher Education</i> , 2023, 35, 272-295.	3.9	5
342	Digitizing Product Dissection: A Case Study on Augmented Reality and Animation in Engineering Education. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2022, 144, .	1.7	3
343	Augmented Reality in Education and Educational Games-Implementation and Evaluation: A Focused Literature Review. , 2022, 1, em002.		6
344	Design of a Mixed Reality Application for STEM Distance Education Laboratories. <i>Computers</i> , 2022, 11, 50.	2.1	10
345	The effect of mobile virtual reality on operating room nursing education. <i>Teaching and Learning in Nursing</i> , 2022, 17, 199-202.	0.7	8
346	ScienceVR: A Virtual Reality Framework for STEM Education, Simulation and Assessment. , 2021, , .		6
347	A development platform prototype for virtual laboratories. <i>Computer Applications in Engineering Education</i> , 2022, 30, 678-689.	2.2	1
348	Conversion of Virtual Lab Experiments using FOSS: A Case Study of Virtual Labs by NMEICT. , 2021, , .		1
349	USE OF MOBILE APPLICATIONS TO IDENTIFY PLANTS. <i>Naukovĭ Zapiski Maloĭ Akademĭ Nauk Ukraĭni</i> , 2021, , . 0		0
350	Hot Topics and Frontier Evolution of Science Education Research: a Bibliometric Mapping from 2001 to 2020. <i>Science and Education</i> , 2023, 32, 845-869.	1.7	11

#	ARTICLE	IF	CITATIONS
351	The varied experience of undergraduate students during the transition to mandatory online chem lab during the initial lockdown of the COVID-19 pandemic. <i>Disciplinary and Interdisciplinary Science Education Research</i> , 2022, 4, .	1.6	3
352	The Investigation of Mobile Virtual Reality Application Instructional Content in Geography Education: Academic Achievement, Presence, and Student Interaction. <i>International Journal of Human-Computer Interaction</i> , 2022, 38, 1487-1503.	3.3	14
354	Pedagogically-Improved Blended Learning of a Chemistry Course Through a Computerized Virtual Laboratory. <i>International Journal of Online Pedagogy and Course Design</i> , 2022, 12, 1-21.	0.3	0
355	Towards Collaborative Learning in Virtual Reality: A Comparison of Co-Located Symmetric and Asymmetric Pair-Learning. , 2022, , .		21
356	Virtual Laboratories- A historical review and bibliometric analysis of the past three decades. <i>Education and Information Technologies</i> , 2022, 27, 11055-11087.	3.5	26
357	Development of a server-based integrated virtual laboratory for digital electronics. <i>Computer Applications in Engineering Education</i> , 0, , .	2.2	1
358	A virtual laboratory for conducting "hands-on" experiments on water wave mechanics. <i>Continental Shelf Research</i> , 2022, 243, 104760.	0.9	1
359	Words Matter: Defining opportunities in STEM to improve rural and urban student outcomes. <i>Journal of Science Policy &amp; Governance</i> , 2022, 20, .	0.1	0
360	Didactic Use of Virtual Reality in Colombian Universities: Professors' Perspective. <i>Multimodal Technologies and Interaction</i> , 2022, 6, 38.	1.7	14
365	Virtual Access to STEM Careers: Two Preliminary Investigations. <i>Lecture Notes in Computer Science</i> , 2022, , 45-58.	1.0	0
367	A Remote Laboratory for Teaching Internet of Things in Online Education. , 2022, , .		0
368	Learning with remote laboratories: Designing control algorithms with both block diagrams and customized C code schemes. <i>Computer Applications in Engineering Education</i> , 2022, 30, 1561-1576.	2.2	5
369	Learning Analytics for Assessing Hands-on Laboratory Skills in Science Classrooms Using Bayesian Network Analysis. <i>Research in Science Education</i> , 2023, 53, 425-444.	1.4	4
370	Attractiveness of Collaborative Platforms for Sustainable E-Learning in Business Studies. <i>Sustainability</i> , 2022, 14, 8257.	1.6	5
371	Hands-on Learning Modules for Upskilling in Industry 4.0 Technologies. , 2022, , .		5
372	Distance Learning of Programmable Logic Control: An Implementation Example. , 2022, , .		0
373	Virtualization of Laboratories. <i>Advances in Educational Technologies and Instructional Design Book Series</i> , 2022, , 215-241.	0.2	2
375	Nearpod as a Gamification Resource for Teaching in Virtual Education: a Mathematical Case Study. , 2022, , .		1

#	ARTICLE	IF	CITATIONS
376	Creation of Immersive Resources Based on Virtual Reality for Dissemination and Teaching in Chemical Engineering. <i>Education Sciences</i> , 2022, 12, 572.	1.4	5
377	Factors Affecting Learners' Adoption of an Educational Metaverse Platform: An Empirical Study Based on an Extended UTAUT Model. <i>Mobile Information Systems</i> , 2022, 2022, 1-15.	0.4	30
378	Experiential Learning in Biomedical Engineering Education Using Wearable Devices: A Case Study in a Biomedical Signals and Systems Analysis Course. <i>Education Sciences</i> , 2022, 12, 598.	1.4	5
379	A Meta-Analysis of Students' Aptitude and Attitude Toward Learning Electronics Through Remote Experimentation. <i>Lecture Notes in Electrical Engineering</i> , 2022, , 667-675.	0.3	0
380	Toward Widespread Remote Laboratories: Evaluating the Effectiveness of a Replication-Based Architecture for Real-World Multiinstitutional Usage. <i>IEEE Access</i> , 2022, 10, 86298-86317.	2.6	8
381	On Studying Text Comprehension Strategy Using the 'Counter-Text' Method: Case-Study on Humanities and Engineering Students. <i>Lecture Notes in Networks and Systems</i> , 2022, , 320-328.	0.5	0
382	Alternative Forms of Laboratory Teaching during the Lockdown Period Caused by the COVID-19 Pandemic. <i>International Journal of Information and Education Technology</i> , 2022, 12, 1737-1747.	0.9	2
383	Flipping Laboratories Toward Future Experimentation Systems: The Blended Use of Hands-On, Pocket, and Online Laboratories. <i>IEEE Industrial Electronics Magazine</i> , 2023, 17, 48-60.	2.3	8
384	Immersive learning technology for ensuring quality education: Ukrainian university case. , 0, 9, 336-354.		6
385	A Distance Learning VR Technology Tool for Science Labs. , 2022, , .		2
386	Imersivnã-virtuãlnã-realita ve vzdãvãnã: SWOT analã½za. <i>Pedagogickã Orientace</i> , 2022, 32, .	0.2	0
387	Examining the key drivers of student acceptance of online labs. <i>Interactive Learning Environments</i> , 0, , 1-16.	4.4	4
388	Adaptive toolkit of branch-oriented workshop environment for enlargement the cloud-based e-learning media platform. , 0, 8, 423-437.		4
389	Molecular dynamics method as an additional educational tool in the course of solid state physics. <i>AIP Conference Proceedings</i> , 2022, , .	0.3	0
390	The possibilities of using virtual reality when introducing students to scientific activities in physics. <i>AIP Conference Proceedings</i> , 2022, , .	0.3	0
391	Designing a drinking water treatment experiment as a virtual lab to support engineering education during the COVID-19 outbreak. <i>Cogent Engineering</i> , 2022, 9, .	1.1	3
392	Digitalizing skills development using simulation-based mobile (SiM) learning application. <i>Journal of Computers in Education</i> , 2024, 11, 29-50.	5.0	1
394	From Paper to web: Students as partners for virtual laboratories in (Bio)chemical engineering education. <i>Frontiers in Chemical Engineering</i> , 0, 4, .	1.3	2

#	ARTICLE	IF	CITATIONS
395	Open Science-friendly national R&D knowledge and information infrastructure. Septentrio Conference Series, 2022, , .	0.0	0
396	A scoping review on the relationship between robotics in educational contexts and e-health. Frontiers in Education, 0, 7, .	1.2	2
397	Low-Cost Remote Laboratory for Robotics Undergraduate Learning during Covid Context. , 2022, , .		1
398	Testing of human reactions during braking manoeuvres combining a physical test bed with virtual reality. Frontiers in Future Transportation, 0, 3, .	1.3	0
400	Designing interactive augmented reality application for student's directed learning of continuous distillation process. Computers and Chemical Engineering, 2023, 169, 108086.	2.0	4
401	AGILEST approach: Using machine learning agents to facilitate kinesthetic learning in STEM education through real-time touchless hand interaction. , 2023, 9, 100034.		5
402	Student motivation in virtual laboratories in bioengineering courses. , 2022, , .		0
403	Assessment of Distance Learning/Teaching Techniques in Engineering. , 2022, , .		0
404	Faculty perspectives on transitioning to exclusively online lab classes in electrical and computer engineering. , 2022, , .		2
405	The Go-Lab Platform, an Inquiry-learning Space: Investigation into Studentsâ€™ Technology Acceptance, Knowledge Integration, and Learning Outcomes. Journal of Science Education and Technology, 2023, 32, 61-77.	2.4	3
406	STEM EÄŸitim Ä±nalÄ±ÅŸmalarÄ±na FarklÄ± Bir BakÄ±ÅŸ: Bibliyometrik Haritalama. , 0, , .		1
407	A bibliometric analysis of the global landscape on STEM education (2004-2021): towards global distribution, subject integration, and research trends. Asia Pacific Journal of Innovation and Entrepreneurship, 2022, 16, 171-203.	1.6	12
408	About the Efficacy of Virtual and Remote Laboratories in STEM Education in Secondary School: A Second-Order Systematic Review. Journal of Educational, Cultural and Psychological Studies, 2022, , .	0.3	2
409	Effectiveness of virtual laboratories on developing expert thinking and decision-making skills among female school students in Palestine. Eurasia Journal of Mathematics, Science and Technology Education, 2022, 18, em2199.	0.7	0
410	Comparison of Google Lens recognition performance with other plant recognition systems. , 2022, 2022, 328-346.		5
411	VFST: Virtual and fully software based toolchain for PC interfacing education and research. Computer Applications in Engineering Education, 2023, 31, 389-407.	2.2	2
412	Strategies for Online-education Model for Project and Laboratory-based Assessment in Environmental Monitoring and Analysis Course. , 2023, 2, 14-25.		0
413	System Dynamics Tools to Study Mediterranean Rangelandâ€™s Sustainability. Land, 2023, 12, 206.	1.2	3

#	ARTICLE	IF	CITATIONS
414	Digital transformation towards sustainability in higher education: state-of-the-art and future research insights. <i>Environment, Development and Sustainability</i> , 2024, 26, 2789-2810.	2.7	10
415	Training Scientific Communication Skills on Medical Imaging within the Virtual World Second Life: Perception of Biomedical Engineering Students. <i>International Journal of Environmental Research and Public Health</i> , 2023, 20, 1697.	1.2	5
416	The retention of information in virtual reality based engineering simulations. <i>European Journal of Engineering Education</i> , 2023, 48, 929-948.	1.5	1
417	3DVL@ES. <i>International Journal of E-Collaboration</i> , 2023, 19, 1-26.	0.4	1
418	A Day in the Life: Characterization of Doctoral Bench Research in Synthetic Chemistry Using Phenomenological Case Studies. <i>Journal of Chemical Education</i> , 2023, 100, 442-458.	1.1	1
419	Harnessing virtual reality for management training: a longitudinal study. <i>Organization Management Journal</i> , 2022, ahead-of-print, .	0.5	2
420	A Combination of Innovative Pedagogical Theories to Enhance the Learning Output – A Case Study with Engineering Students. , 2023, , 49-61.		0
421	Technology for Learning and Knowledge Strategies in Virtual Education: A Case Study of Higher Education. <i>Communications in Computer and Information Science</i> , 2023, , 93-105.	0.4	0
422	Using Technology to Enhance Student Engagement in STEM Subjects in Higher Education. <i>Advances in Educational Technologies and Instructional Design Book Series</i> , 2022, , 165-183.	0.2	1
423	Emerging, Emergent, and Emerged Approaches to Mixed Reality in Learning and Teaching. <i>University Development and Administration</i> , 2023, , 1-20.	0.1	0
424	Bibliometric analysis of augmented reality in education and social science. <i>Online Journal of Communication and Media Technologies</i> , 2023, 13, e202316.	0.4	2
425	Intrinsic and extrinsic motivation among students for laboratory courses - Assessing the impact of virtual laboratories. <i>Computers and Education</i> , 2023, 198, 104758.	5.1	9
426	Virtual Laboratory as A New Educational Trend Post Covid-19: An Effectiveness Study. <i>Mimbar Ilmu</i> , 2023, 27, 501-510.	0.2	1
427	Mechanism of the week: An approach for improving student engagement, interest, and understanding of course material. <i>International Journal of Mechanical Engineering Education</i> , 2023, 51, 155-173.	0.6	2
428	Using Practical Activities for Robotics E-Learning: Case of Study on Web-Based Robotics Remote Labs. <i>Lecture Notes in Networks and Systems</i> , 2023, , 130-144.	0.5	0
429	Improving Oral Presentation Skills for Radiology Residents through Clinical Session Meetings in the Virtual World Second Life. <i>International Journal of Environmental Research and Public Health</i> , 2023, 20, 4738.	1.2	5
430	Learning analytics in virtual laboratories: a systematic literature review of empirical research. <i>Smart Learning Environments</i> , 2023, 10, .	4.3	10
431	The Engineering Curriculum of Higher Education in Indonesia Revisited. <i>Advances in Environmental Engineering and Green Technologies Book Series</i> , 2023, , 213-234.	0.3	0



#	ARTICLE	IF	CITATIONS
432	Efficient web-based simulation on analog electronics circuits laboratory. Computer Applications in Engineering Education, 0, , .	2.2	0
433	The Role and Impact of Virtual Laboratories in Physics Teaching and Learning: A Synthesis of Literature. , 2023, , 1-28.		0
434	Diseño e implementación de metodologías para la creación de laboratorios remotos de docencia: caso de estudio Sistema de Acondicionamiento de Aire. Revista Educación En Ingeniería, 2023, 18, .	0.1	0
435	In-between worlds: Chilean university lecturers'™ experiences of teaching transition between face-to-face and virtual reality contexts during the COVID-19 pandemic. Educational Technology Research and Development, 2023, 71, 1851-1867.	2.0	1
436	An extended technology acceptance model on immersive virtual reality use with primary school students. Technology, Pedagogy and Education, 2023, 32, 367-388.	3.3	2
437	Gamification: Basic concepts and applications in radiology. Radiologia, 2023, 65, 122-132.	0.3	3
438	Integration of Virtual Reality Technology in the Primary School: Students' Creativity and Learning Engagement. , 2022, , .		0
439	Building the Metaverse. Journal of Global Information Management, 2023, 31, 1-28.	1.4	5
440	Impact of COVID-19 on Education: Evolution of Virtual Laboratories. , 2023, , .		0
442	Development of virtual science laboratory (VSL) on linear motion concept. AIP Conference Proceedings, 2022, , .	0.3	0
443	Development of an Industrial Control Virtual Reality Module for the Application of Electrical Switchgear in Practical Applications. Lecture Notes in Electrical Engineering, 2023, , 59-72.	0.3	0
445	Revolutionizing Healthcare by Accessing the Opportunities for Virtual and Augmented Reality. , 2023, , .		1
446	Virtual Simulation Measurement of Lamp Intensity Distribution Based on Near Field Goniophotometer. Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, 2023, , 227-238.	0.2	0
450	Bibliometric Analysis of Virtual Reality in School and University Contexts. Lecture Notes in Networks and Systems, 2023, , 72-92.	0.5	0
460	Hands-On E-Learning and Distance Education in Engineering: Wishful Thinking or a Practical Reality?. , 2023, , 191-222.		0
464	Emerging, Emergent, and Emerged Approaches to Mixed Reality in Learning and Teaching. University Development and Administration, 2023, , 527-546.	0.1	0
470	Exploring Immersive Language Learning Using Virtual Reality. , 2023, , 1041-1061.		0
480	Using Physical and Virtual Labs for Experimentation in STEM+ Education: From Theory and Research to Practice. , 2024, , 3-19.		0

#	ARTICLE	IF	CITATIONS
486	Developing Cuboid Recognition-based AR Application for Preschool Marine Education. , 2023, , .		0
489	Epsilon Futuristic Virtual User Environment. , 2023, , .		0
491	A Virtual Learning Platform for Biomedical Laboratory Scientists Using Unity3D. , 2023, , .		0
496	The Impact of VR-Based Learning on Student Engagement and Learning Outcomes in Higher Education. Impact of Meat Consumption on Health and Environmental Sustainability, 2024, , 207-223.	0.4	0
498	Educative impact of a remote laboratory to experience industrial robotics. , 2023, , .		0
499	A framework for the design and use of virtual labs in digital engineering education. AIP Conference Proceedings, 2024, , .	0.3	0
501	Introduction of a Virtual Reality Laboratory in a Tissue Engineering Course. , 0, , .		0
502	A Scoping Review of Online Laboratory Learning Outcomes in Engineering Education Research. , 0, , .		0
506	Switching from Hands-on Labs to Exclusively Online Experimentation in Electrical and Computer Engineering Courses. , 0, , .		0