Literature Search Results: Innovative technologies in AHP education

Research question or topic:
Evidence review on the use of emerging innovative technologies (Virtual Reality, Extended Reality and Augmented Reality) and simulation in the delivery of AHP education (theory and practice)
Name of person/ team requesting search:
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Contents

Search comments

The literature includes examples of the use of innovative technologies in educational settings in the following allied health professions:

- Dietetics **[1]**
- Occupational therapy **[2]**
- Osteopathy **[3-5]**
- Paramedicine **[6-7]**
- Physiotherapy **[8-15]**
- Podiatry **[16-17]**
- Radiography **[18-23]**

The literature search also identified a small number of similar examples relating to allied health professions in general **[24-26]**, with additional focus on the use of innovative technologies in interprofessional education **[27-31]**.

Complete numbered list of results with links

Dietetics

Number	Citation	Abstract/key themes
1	An epistemological assessment of learning nutritional information with augmented reality L.-J. ChanLin, et al. Electronic Library; Apr 2019; vol. 37 (no. 2); p. 210-224 *Athens log-in required**	In this study, students' learning of dietary knowledge via AR was assessed through an epistemological approach. Students' epistemological understanding of healthy diets was assessed before and after learning with the mobile nutrition monitoring system to examine the epistemological differences. Learning assessment of 65 freshmen students indicated a significant increase in dietary concepts (p < 0.01) and a decrease in misconceptions (p < 0.001) after learning with the system. From the analysis of the epistemological interviews, students improved their dietary knowledge after learning and application of the AR mobile application. However, the present study might have its limitations, as it only assessed learning from a pre-test/post-test design for a specific learning context over a short period of learning time. The use of interviews based on the epistemological approach might also have its limitations in the interpretation of the phenomenon. Future implementations can also be extended to different populations to promote self-monitoring dietary behaviours. It is hoped that the findings of this study will contribute to the application of AR in learning about dietary knowledge.

Occupational therapy

Number	Citation	Abstract/key themes
2	Simulation in Occupational Therapy Curricula: A literature review S. Bennett, et al. Australian Occupational Therapy Journal; 2017	Occupational therapy educators have used the full scope of simulation modalities, including written case studies (22), standardised patients (13), video case studies (15), computer-based and virtual reality cases (7), role-play (8) and mannequins and part-task trainers (4). Simulation-based education has been used for a wide range of purposes in occupational therapy curricula and appears to be well received. Randomised

	Abstract only*	controlled trials are needed to more accurately understand the effects of simulation not just for occupational therapy students but for longer term outcomes in clinical practice.

Osteopathy

Number	Citation	Abstract/key themes
3	Teaching Medical Students About Health Systems Science and Osteopathic Principles and Practice Using a Virtual World: The Envision Community Health Center L. McCoy, et al. The Journal of the American Osteopathic Association; Aug 2018; vol. 118 (no. 8); p. 545-554 *Abstract only**	First-year students, who were preparing for clinical training in CHCs, and second-year students, who were training in CHCs, completed the simulation case studies, gaining practice in clinical reasoning, Health Systems Science, and applied osteopathic principles and practice. This article explains the project, illustrates an alignment with Health Systems Science and osteopathic competencies, and highlights findings from previous research studies.
4	Perceived value of a skills laboratory with virtual reality simulator training in arthroscopy: A survey of orthopedic surgery residents K. Keith, et al. Journal of the American Osteopathic Association; Oct 2018; vol. 118 (no. 10); p. 667-672 *Abstract only**	**Objective:** To determine osteopathic orthopedic surgery residents' perceived value of having access to a VR simulator before performing an arthroscopic procedure on a live patient. **Conclusion:** Osteopathic orthopedic surgery residents indicated that they would benefit from the addition of an arthroscopic skills laboratory with a VR simulator. Furthermore, they believed that the skills learned in the skills laboratory would transfer to the operating room and would increase their comfort level with the procedure.
5	Predictors of osteopathic medical students' readiness to use health information technology R. J. Jacobs, et al	Understanding students' level of HIT readiness may help guide medical education intervention efforts to better prepare future osteopathic physicians for HIT engagement and use. Innovative approaches to HIT education in medical school curricula that include biomedical informatics may be necessary.

Journal - American Osteopathic Association; Dec 2017; vol. 117 (no. 12); p. 773-81	Using a cross-sectional approach, quantitative surveys were collected from students attending a large osteopathic medical school. Multivariate regression modeling was used to determine whether knowledge, attitudes, behaviors, and personal characteristics were associated with students' readiness to use HIT in future clinical practice. Six hundred four students responded to at least 70% of the survey and were included in the analysis. Multivariate modeling successfully explained the 26% of variance in predicting students' readiness to use HIT ($F8,506=22.6$, $P<.001$, $R2=0.263$). Greater self-efficacy, openness to change (in academic/work settings), favorable attitudes toward HIT use, mobile technology use, younger age, being male, and prior exposure to technology were associated with readiness to use HIT.

Paramedicine

Number	Citation	Abstract/key themes
6	Simulation Use in Paramedic Education Research (SUPER): A Descriptive Study K. D. McKenna, et al. Prehospital emergency care: official journal of the National Association of EMS Physicians and the National Association of State EMS Directors; 2015; vol. 19 (no. 3); p. 432-440 *Athens log-in required**	To ensure simulation is used effectively, programs must have the appropriate equipment, faculty training, and resources. If any of these elements is missing, programs are less likely to use simulation. Administrators must recognize that to maximize the use of simulation within their program, they must view simulation as a fully integrated strategy within their education system. It is incumbent on program directors to ensure that their faculty has adequate initial and ongoing simulation education, mentors to assist with adoption of new technologies, and sufficient personnel resources and equipment (representing patients of all ages) to promote the most effective use of simulation.
7	ParAVR: A virtual reality training simulator for paramedic skills maintenance N. Rees, et al. Journal of Paramedic Practice; Dec 2020; vol. 12 (no. 12); p. 478-486	**Methods:** Computer scientists at the University of Chester and the Welsh Ambulance Services NHS Trust (WAST) developed ParaVR in four stages: identifying requirements and specifications; alpha version development; beta version development; and management—development of software, further funding and commercialisation.

	Abstract only*	**Conclusion:** VR is an emerging educational tool with the potential to enhance paramedic skills development and maintenance. The ParaVR programme is the first step in the authors' development, testing and scaling up of this technology.

Physiotherapy

Number	Citation	Abstract/key themes
8	Exploring the impact of digital technologies on physiotherapy practice: A qualitative study L. Tan, & A. K. Buttery Physiotherapy (United Kingdom); Jan 2019; vol. 105 *Abstract only**	Digital technologies are impacting physiotherapy clinical practice in complex and numerous ways and are changing the nature of physiotherapy consultations. Physiotherapists need trusted sources of reliable and up-to-date information on technologies that are safe and improve people's health. People's expectations of a physiotherapy appointment and the digital technologies that underpin the structure, process and outcomes of a healthcare encounter are changing the way physiotherapists practice. Allied health professional leadership and influence in digital culture in the NHS is needed. Further research on patient's perspectives on the use of digital technologies in physiotherapy practice is required.
9	Learning promotion of physiotherapy in neurological diseases: Design and application of a virtual reality-based game L. Shahmoradi, et al. Journal of education and health promotion; 2020; vol. 9; p. 234 *Athens log-in required**	The results of the study showed that game-based learning enhances students' understanding of learning. According to the results of the second questionnaire, the game had a great role in facilitating learning and student satisfaction. Survey on closed questions showed that using VR games can help students' perception of learning and also increase understanding the main concepts of physiotherapy in neurological patients and student satisfaction.
10	A blended-learning programme regarding professional ethics in physiotherapy students M. Aguilar-Rodriguez, et al. Nursing Ethics; 2018	After the programme, attitudes and knowledge towards learning professional ethics of experimental group students significantly improved, while no differences were observed in control group. Moreover, opinions reported an adequate extension of themes and temporization, importance of clinical practices and interest of topics. Case study method and role playing were considered as the most helpful techniques.

	Abstract only*	
11	[Simulation, as innovation in undergraduate physiotherapy assessments: does this enhance patient outcome and experience? A qualitative study](#) C.Y. Wong, & A. O'Brien Physiotherapy (United Kingdom); May 2020; vol. 107 *Abstract only**	Patient simulation is a common approach used within many pre-registration healthcare curricula for both assessment and teaching purposes. Students from the Keele Physiotherapy programme "model" for each other to practice handling and communication skills during classes and examinations. This study aimed to explore students' attitudes and beliefs relating to simulation activities, in both classroom learning and assessment environments, and report the perceived effectiveness of modelling as a learning experience, to enhance future patient treatment outcomes.
12	[Interactive virtual scenarios as a technological resource to improve musculoskeletal clinical reasoning skills of undergraduate physiotherapy students](#) G. Torres, et al. Physiotherapy theory and practice; Aug 2020; p. 1-11 *Abstract only**	Background: Clinical reasoning is a fundamental competency in the learning process of health professionals. Since learning with traditional methods presents difficulties, teaching with interactive virtual scenarios is a good alternative. Objective: To describe the impact of a blended training with interactive virtual scenarios for the development of clinical reasoning skills in undergraduate physiotherapy students. Methods: A sample of 92 students solved eight storylines. Assessment error percentage, clinical pattern recognition, satisfaction, and the perception of difficulty were obtained. A proportions test was used to compare baseline and final assessments. To analyze the relationship between the variables, multilevel univariate logistic regression models were built. Results: A significant difference was observed in the error percentage between baseline and final assessment ($p < .001$). Comparing the last storyline to the first one, there were 2.63 times more possibilities to correctly recognize the pattern. The error percentage was associated with the opportunity to recognize the pattern precisely ($p < .001$). Thus, for each increasing unit in the error percentage, the possibility to correctly recognize the pattern decreased by 11% (OR = 0.89).

		Conclusions: The use of this innovative blended training with virtual scenarios allowed students to systematically improve their recognition abilities of clinical patterns and decrease mistakes in the decision-making process.
13	Preparing undergraduate physiotherapy students for clinical practice through the use of simulation M. Wyres Physiotherapy (United Kingdom); Jan 2019; vol. 105 *Abstract only**	Simulation currently holds an important place within education of healthcare professionals. This can range from more traditional methods of role play and case scenarios, but has now evolved into using flexible environments, cross profession working, problem based learning and virtual reality. Many of these experiences would greatly benefit current clinical staff to improve clinical skills, communication and team working. Students engage within the task, review positively and share experiences. Further projects have been planned and involve teaching physiotherapy students within simulation facilities at Coventry University such as the High Dependency Unit, Acute Wards, Community settings and virtual reality settings. As well as methods to measure student confidence and competency in specific tasks. Implications: Future healthcare professionals and current undergraduate students are experiencing a more realistic and engaging education process as well as learning alongside the multidisciplinary professions they will progress to practicing alongside. Ultimately producing new graduates that are ready for the workplace and the ever increasing demands placed on new graduates within the work place.
14	Augmented reality learning environment for physiotherapy education D. Kelly, et al. Physical Therapy Reviews; Feb 2018; vol. 23 (no. 1); p. 21-28 *Abstract only**	**Objective** Augmented Studio is an augmented reality system that helps facilitate this by projecting anatomical structures over moving bodies and allowing annotation of these structures. **Methods** Via a user and learner-centred design approach, augmented reality technology can assist education of physiotherapy students through augmentation and annotation. **Results** Using projection mapping Augmented Studio enables display of anatomy such as skeleton and muscles on the body in real time as it moves. With the creation of a technique to deliver hand-drawing annotation projected onto the moving body student and teacher clinical reasoning strategies can be made explicit. **Conclusion**

		Outcomes from a pilot usability study showed that Augmented Studio promotes the creation of an engaging teaching and learning experience and the facilitation of communication between teachers and students.
15	[Physical therapy student choices when engaging with traditional or technological teaching resources](#) G. Kessel, et al. Journal of Physical Therapy Education; 2018; vol. 32 (no. 3); p. 283-8	**Methods.** One hundred and fifteen (59% female); average age 21.7 years; 7.8% international students in the Bachelor of Physiotherapy and Master of Physiotherapy programs at the University of South Australia. A questionnaire with open-ended questions was administered in class and provided data on students' preferences and perceptions regarding resources that support their learning. Students' attendance, online resource usage, and grade point average were collected and used to explore themes emerging from the data. **Results.** Students with higher grades described their own behaviors that assisted their learning while students with lower grades focused on external barriers that limited their learning. Participants chose to attend class because this enabled them to ask questions, access explanations and demonstrations, increase concentration, pick up nonverbal communication, and access teacher support. Participants chose to use online activities because this supported them to work at their own pace, or at an optimal time, or concentrate more. **Discussion.** Participants reported making choices based on perceptions that a particular behavior would contribute to the immediate process of learning or assessment outcomes, rather than long-term goals such as being able to provide the best patient care. Classroom delivery is successful for students who attribute social interaction as a key aspect to their effective learning while online delivery formats meet the needs of students who engage better in private contexts. **Conclusion.** Engagement success may increase if face-to-face sessions have flexible access, while online activities include opportunities for interaction and support.

Podiatry

Number	Citation	Abstract/key themes

16	The Use of Virtual Reality in Podiatric Medical Education J. Labovitz, & C. Hubbard Clinics in podiatric medicine and surgery; Apr 2020; vol. 37 (no. 2); p. 409-420 *Abstract only**	The development of the Western University of Health Sciences virtual OR provides podiatric medical students basic OR knowledge and skills through performing basic surgical procedures. This new method of presenting content in podiatric medical education enhances the learning experience in a less stressful environment. The virtual reality experience allows students to gain experience without undue risk to the patient. Thus students can improve competency while focusing on the experience instead of the potentially overwhelming OR setting.
17	It's not your father's podiatry school: Advances in podiatric medical education J. C. Page, & D. Freeman Journal of the American Podiatric Medical Association; Nov 2018; vol. 108 (no. 6); p. 538-545 *Abstract only**	This paper discusses the innovative changes in podiatric medical education found in today's schools and colleges of podiatric medicine, including changes in philosophy, resources and technology, curriculum, delivery methods, the role of faculty, and assessment tools, and the changing expectations of the students themselves. There is an emphasis on the shift from a teacher-centered approach to professional education to a student-centered approach. Technological advances have had a tremendous impact on the educational process and have opened doors to many new forms of educational delivery that better meet the needs of today's students.

Radiography

Number	Citation	Abstract/key themes
18	The use of simulation and moulage in undergraduate diagnostic radiography education: A burns scenario Howard, M.L. Shiner Radiography; Aug 2019; vol. 25 (no. 3); p. 194-201 *Abstract only**	**Highlights** • An innovative use of moulage to introduce students to burns patients. • Simulation is effective in preparing students for imaging complex patients. • Simulations provide a safe environment to experience difficult situations. • Facial burns can prevent students from 'seeing' the patient beyond. • Moulage provides realism to a simulation promoting a physiological reaction.
19	The use of virtual reality simulation to improve technical skill in the	This project aimed to evaluate the impact of an innovative virtual reality (VR) learning environment on the development of technical proficiency by students.

	undergraduate medical imaging student T. Gunn, et al. Interactive Learning Environments; Aug 2018; vol. 26 (no. 5); p. 613-620 *Abstract only**	The study assessed the technical skills of first year medical imaging students. The learning experience by each student was either via traditional laboratory-based simulation or VR simulation, for two specified anatomical protocols. Following the learning experience, the students performed role-plays and were assessed on their technical proficiency. The type of learning environment, laboratory-based or VR simulation, was recorded for each radiographic procedure, as well as demographic data. Data demonstrated an improved total role-play skill score for those students trained using VR software simulation compared with the total role-play skills score traditional laboratory simulation. Demographic multivariable analysis demonstrated no statistically significant association of age, gender, gaming skills/activity with the outcome. The novel medical imaging VR simulation learning tool facilitated technical skill acquisition, equal to, or slightly better than traditional laboratory training.
20	Practical applications in radiography education B. Spence Radiologic Technology; Mar 2019; vol. 9 (no. 4); p. 369-384 *Abstract only**	This article describes practical and innovative approaches in radiography education, including active learning strategies, technological tools such as virtual anatomical models and clinical simulators, and reflective writing exercises. It also discusses ways to foster professionalism and lifelong learning in radiography students.
21	Virtual reality versus conventional clinical role-play for radiographic positioning training: A students' perception study D. Sapkaroski, et al. Radiography; Feb 2020; vol. 26 (no. 1); p. 57-62 *Abstract only**	The aim of this study was to assess if students perceptions varied relating to the effectiveness of either a virtual reality (VR) simulation or traditional clinical role-play scenario in developing radiographic hand positioning skills. The perceptions of novice students in training for radiographic hand positioning tasks, using either a VR SLE or clinical role-play scenario, did not differ. There was a strong similarity in common themes, however, a key point of difference identified was the benefit of repetition afforded by the VR simulation, in contrast to the need for more time using traditional role-play in a constrained laboratory setting.
22	3D virtual reality simulation in radiography education: The students' experience M. O'Connor, et al.	It is widely accepted that simulation is a valuable pedagogical approach for diagnostic radiography education. The immersive 3D Virtual Medical Coaching Ltd simulation tool implemented in this pilot study was greatly valued by first year radiography students. Students felt more confident in their radiographic

	Radiography; Feb 2021; vol. 27 (no. 1); p. 208-214 *Athens log-in required**	technique after using the tool and thoroughly enjoyed this interactive learning experience. However, it should be noted that VR was deemed a useful learning resource to supplement, not replace, existing clinical skills labs and clinical placement. The findings of this study will be used to improve and expand integration of VR in the next iteration of the undergraduate radiography curriculum. Students felt VR was lacking in realism in relation to key aspects of patient positioning such as inability to palpate bony landmarks and lack of patient interaction. Thus, students felt the clinical skills lab was more suitable than VR in recreating a realistic clinical scenario simulation for assessment purposes. Almost one quarter of the cohort experienced minor technical glitches when using the VR suite, which may have biased their perception of the reliability of VR for assessment. Most of the glitches noticed by students during this pilot study have since been resolved by the software provider. Students felt that VR was less realistic than clinical skills lab as there was no communication involved with the virtual patient, which correlates to student feedback in other studies.
23	Quantification of Student Radiographic Patient Positioning Using an Immersive Virtual Reality Simulation D. Sapkaroski, et al. Simulation in healthcare: journal of the Society for Simulation in Healthcare; Aug 2019; vol. 14 (no. 4); p. 258-263 *Abstract only**	Year 1 radiography students (N = 76) were randomly split into 2 cohorts, each of which were trained at performing the same tasks relating to optimal hand positioning for projection x-ray imaging; group 1 was trained using the CETSOL VR Clinic software, whereas group 2 was trained using conventional simulated role-play in a real clinical environment. All participants completed an examination 3 weeks after training. A significant difference in patient positioning was evident between the groups; the VR clinic cohort demonstrated improved patient positioning outcomes. The observed improvement is attributed to the inherent task deconstruction and variety of visualization mechanisms available in immersive VR environments.

Non-specific AHPs

Number	Citation	Abstract/key themes
24	Simulation based education: Does it improve allied health professionals	The National Confidential Enquiry into Patient Outcomes and Death (NCEPOD) "On the Right Trach" report (2014) investigated outcomes for patients with tracheostomies. One of the primary recommendations of the report included

	[(AHPs) tracheostomy management skills?](link) A. Ginnelly, et al. Journal of the Intensive Care Society; 2020; vol. 21 (no. 2); p. 153-154 *Abstract only**	multidisciplinary team (MDT) care being part of the routine pathway for patients with tracheostomies. Key professions identified by the NCEPOD report included Physiotherapists and Speech and Language Therapists (SLT). We theorised that a two-profession specific SBE course could be a powerful tool for enhancing knowledge and skills in the management of patients with tracheostomies. The biggest impact of this bi-professional SBE tracheostomy course related to improved participant confidence in communication dimensions. SIMTRACH also improved patient safety dimensions as demonstrated by the improvement in resuscitation and emergency situation questions on the SIMTRACH self-evaluation. SBE should be available to all healthcare professionals managing patients with tracheostomy.
25	[Simulation-based assessments in health professional education: a systematic review](link) T. Ryall, et al. Journal of multidisciplinary healthcare; 2016; vol. 9; p. 69-82 *Athens log-in required**	The evidence from this review suggests that the use of standardised patients would be a practical approach for many clinical situations, with the use of part-task trainers or patient simulators to aid in areas in which the actors are unable to "act" or in cases wherein invasive procedures are undertaken. In assessments in which clinical skills need to be evaluated in high-pressure situations, the evidence of simulation-based assessments is that the use of patient simulators in high-fidelity environments may be more suitable than using task trainers. High-fidelity simulation assessments could also be used to incorporate and assess multidisciplinary team assessments. Overall, there is a clear need for further methodologically robust research into simulation-based assessments within health professional education.
26	[A study on perception of students regarding newer teaching methods in medical education](link) C. Ramya, et al. Journal of Clinical and Diagnostic Research; Aug 2020; vol. 14 (no. 8) *Abstract only**	**Materials and Methods:** A total of 206 students participated in the study, of which 90 were MBBS students, 30 were Physiotherapy students and 86 were Nursing students. Newer teaching methods like Crossword Puzzles (CWPs) and Mind Maps (MMs) were introduced in the classes. A feedback form was given at the end of the class and their responses were collected regarding newer methods. Perceptions of students regarding newer teaching methods were represented using descriptive statistics in frequencies and percentages. **Results:** Female students were more compared to male students across all the branches with 63.3% female students in MBBS, 80% in Physiotherapy and 82.6% in Nursing. 84.4% of MBBS students, 86.7% of Physiotherapy students and 97.7% of nursing students were interested in filling CWPs. 94.4% of MBBS

		students, 93.3% of Physiotherapy students and 100% of nursing students opined that MMs help in memory retention. 93.3% of MBBS students, 96.7% of Physiotherapy students and 91.9% of nursing students wanted newer teaching methods to be part of the curriculum. **Conclusion:** Educators need to constantly change their teaching methods in order to hold the attention of students. CWPs and MMs created interest among the students in learning subject. CWPs enhanced group interaction among peers whereas MMs helped in retaining the key points and also bringing out the creative talent.

Interprofessional education

Number	Citation	Abstract/key themes
27	Design and evaluation of a 3D virtual environment for collaborative learning in interprofessional team care delivery S. Y. Liaw, et al. Nurse education today; Oct 2019; vol. 81; p. 64-71 *Abstract only**	The aim of this study is to describe the development of a 3D-VE and to evaluate the experience of healthcare students from six healthcare courses (Medicine, Nursing, Pharmacy, Physiotherapy, Occupational Therapy, and Medical Social Work) of their collaborative learning in the environment. The students demonstrated significant improvements in their attitudes toward healthcare teams ($p < 0.05$) and interprofessional collaboration ($p < 0.001$) after the collaborative learning. Four themes emerged from the focus group discussions: "feeling real", whereby the students felt immersed in their own roles; the virtual environment was perceived as "less threatening" compared to face-to-face interactions; "understanding each other's roles" among different healthcare professionals; and there were some "technical hiccups" related to sound quality and navigation.
28	Virtual Reality Simulation in Interprofessional Round Training for Health Care Students: A Qualitative Evaluation Study S.Y. Liaw, et al. Clinical Simulation in Nursing; 2020	**Highlights** • The exposure to team care delivery using virtual simulation can foster understanding of the interdependent roles of health care professionals toward patient-centered care. • We anticipate a greater role for virtual simulations to support interprofessional education. • The impact of virtual simulation could be optimized by supplementing with workplace-based team training to contextualize learning with clinical practice.

	*Abstract only**	
29	[Interprofessional education: A disaster response simulation activity for military medics, nursing, & paramedic science students](#) B. Murray, et al. Nurse Education in Practice; Aug 2019; vol. 39 ; p. 67-72 *Abstract only**	This paper describes how a disaster response simulation can be utilized as an innovative experiential learning technique. Additionally, interprofessional collaboration and positive learning experiences were fostered between military trainees and health care students in nursing and paramedic sciences. The constructivist framework utilized enabled educators to incorporate interprofessional collaboration, clinical reasoning, and technical skills in the safe learning environment of a simulation.
30	[Establishing an interprofessional simulation curriculum for care of the high acuity burn patient](#) P.W. Delaney, & A. Wilson Journal of Burn Care and Research; Apr 2018; vol. 39 *Abstract only**	Our facility has developed an inter-professional burn care curriculum utilizing simulation for current and future residents, nursing staff, nursing students, and allied health professionals to standardize the delivery of care, utilizing best practice denoted from the Burn Nurse Competency Initiative and American Burn Association guidelines. Team members included physicians, nurses, respiratory therapy, and technicians. Interest in continuing education grew, adding extra courses for Emergency Department Staff, nurse internship courses, and regular offerings for the trauma residency program. Evaluations following simulations were positive, with feedback leading to improved options for documentation of burns and the opportunity to practice charting in a simulation setting.
31	[Immersive clinical simulation in undergraduate health care interprofessional education: knowledge and perceptions](#) G. Alinier, et al. Clinical Simulation in Nursing; Apr 2014; vol. 10 (no. 4); p. e205 *Athens log-in required**	The purpose of this study was to explore whether scenario-based simulation improved trainees' perception about multiprofessional working, IPE, and knowledge of other healthcare professionals' roles and skills. The most significant results of this study relate to the marked difference in attitude between the two study groups. The experimental group students responded to all five statements relating to multiprofessional working and interprofessional education more positively than control group students.

Appendix

Sources and Databases Searched

Healthcare Databases Advanced Search (HDAS) was used to search the following databases: AMED; Medline; CINAHL; BNI; EMBASE; EMCARE; PubMed; HMIC and PsycINFO. Google Scholar was used to citation match and find further relevant papers.

Search Strategies

1. "virtual reality" OR VR
2. "extended reality" OR XR
3. "mixed reality" OR MR
4. "augmented reality" OR AR
5. "clinical simulation" OR "medical simulation" OR "health simulation"
6. tech* AND (immersive OR innovative OR emerging)
7. "art therap*" OR "drama therap*" OR "music therap*" OR "chiropod*" OR "podiatr*" OR ("dietitian" OR "dietetics") OR "occupational therap*" OR "operating department practitioner" OR "orthopti*" OR "osteopath*" OR "paramedic*" OR "physiotherap*" OR "prostheti*" OR "orthoti*" OR "radiograph*" OR "speech and language therap*"
8. (education OR training OR learning)
9. 1 OR 2 OR 3 OR 4 OR 5 OR 6
10. 7 AND 9
11. 8 AND 10

Disclaimer

Searching the literature retrieved the information provided. We recommend checking the relevance and critically appraising the information contained within when applying to your own decisions, as we cannot accept responsibility for actions taken based on it. Every effort has been made to ensure that the information supplied is accurate, current and complete, however for various reasons it may not represent the entire body of information available.

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