**Scoping Review Search Strategies – innovations in neurology education**

W. Denney Zimmerman, SOM

Search developed by Emily F. Gorman, MLIS

Final searches run on 04 November 2021

Total references on 04 November 2021: 5600 references

Total following de-duplication in Covidence: 3418 references

Delivery Method: Covidence

Mendeley group for key papers: <https://www.mendeley.com/community/inovations-in-neurological-education-systematic-review/documents/>

**PubMed (PubMed.gov) – 1151** references retrieved on 04 November 2021

Single-line search run in the “New PubMed” interface:

(innovat\*[tiab] OR novel[tiab] OR simulat\*[tiab] OR sbml[tiab] OR virtual reality[tiab] OR vr system[tiab] OR vr interface[tiab] OR gamif\*[tiab] OR game\*[tiab] OR flipped class\*[tiab] OR problem-based learning[tiab] OR computer-based[tiab] OR art-based[tiab] OR arts-based[tiab] OR narrative medicine[tiab] OR social media[tiab] OR education intervention\*[tiab] OR educational intervention\*[tiab] OR roleplay\*[tiab] OR role play\*[tiab] OR interactive[tiab] OR instructional technolog\*[tiab] OR skills model\*[tiab] OR augmented realit\*[tiab] OR mixed realit\*[tiab] OR podcast\*[tiab] OR webcast\*[tiab] OR free online access medical education[tiab] OR foam[tiab] OR mobile app\*[tiab] OR electronic app\*[tiab] OR software app\*[tiab] OR tablet app\*[tiab] OR multimedia[tiab] OR "computer-assisted instruction"[mesh] OR "patient simulation"[mesh] OR "video games"[mesh] OR "narrative medicine"[mesh] OR "art"[mesh] OR "simulation training"[mesh] OR "computer simulation"[mesh] OR "problem-based learning"[mesh] OR "augmented reality"[mesh] OR "user-computer interface"[mesh:noexp] OR "webcasts as topic"[mesh] OR "mobile applications"[mesh] OR "social media"[mesh] OR "multimedia"[mesh]) AND (educat\*[tiab] OR school\*[tiab] OR curricul\*[tiab] OR training[tiab] OR clerkship\*[tiab] OR teach\*[tiab] OR instruction\*[tiab] OR learn\*[tiab] OR "education"[mesh] OR "schools"[mesh] OR "internship and residency"[mesh] OR "curriculum"[mesh] OR "teaching"[mesh] OR "education, medical"[mesh] OR "education"[subheading] OR "clinical clerkship"[mesh] OR "learning"[mesh]) AND (postgraduate[tiab] OR residen\*[tiab] OR trainee\*[tiab] OR student\*[tiab] OR intern[tiab] OR interns\*[tiab] OR fellow\*[tiab] OR "students"[mesh]) AND (neurolog\*[tiab] OR neurophobi\*[tiab] OR neuroanatom\*[tiab] OR neurophysiol\*[tiab] OR neuropharmacolog\*[tiab] OR neuroradiol\*[tiab] OR neurosurg\*[tiab] OR neurotol\*[tiab] OR neuroendovasc\*[tiab] OR neurovasc\*[tiab] OR neuromusc\*[tiab] OR "neurology"[mesh] OR "neuroanatomy"[mesh] OR "neuropharmacology"[mesh] OR "neurophysiology"[mesh] OR "neurosurgery"[mesh] OR "neurosurgical procedures"[mesh])

**Embase (Embase.com) – 2172** references retrieved on 04 November 2021

Single-line search run in Results tab of Embase.com interface:

(innovat\*:ti,ab,kw OR novel:ti,ab,kw OR simulat\*:ti,ab,kw OR sbml:ti,ab,kw OR 'virtual reality':ti,ab,kw OR ((vr NEAR/1 (interface OR simulator OR system)):ti,ab,kw) OR gamif\*:ti,ab,kw OR game\*:ti,ab,kw OR 'flipped class\*':ti,ab,kw OR 'problem-based learning':ti,ab,kw OR 'computer-based':ti,ab,kw OR 'art-based':ti,ab,kw OR 'arts-based':ti,ab,kw OR 'narrative medicine':ti,ab,kw OR 'social media':ti,ab,kw OR 'education\* intervention\*':ti,ab,kw OR roleplay\*:ti,ab,kw OR 'role play\*':ti,ab,kw OR interactive:ti,ab,kw OR 'instructional technology':ti,ab,kw OR 'skills model\*':ti,ab,kw OR 'augmented realit\*':ti,ab,kw OR 'mixed realit\*':ti,ab,kw OR podcast\*:ti,ab,kw OR webcast\*:ti,ab,kw OR 'free online access medical education':ti,ab,kw OR foam:ti,ab,kw OR (((mobile OR electronic OR software OR tablet) NEAR/1 app\*):ti,ab,kw) OR multimedia:ti,ab,kw OR 'innovation'/exp OR 'simulation'/exp OR 'simulation training'/exp OR 'virtual reality'/exp OR 'virtual reality system'/exp OR 'gamification'/exp OR 'flipped classroom'/exp OR 'social media'/exp OR 'narrative medicine'/exp OR 'art'/exp OR 'teamwork'/exp OR 'high fidelity simulation training'/exp OR 'information technology'/exp OR 'online system'/exp OR 'simulation based mastery learning'/exp OR 'simulator'/exp OR 'augmented reality'/exp OR 'computer simulation'/exp OR 'augmented reality system'/exp OR 'podcast'/exp OR 'podcasting'/exp OR 'mobile application'/exp OR 'multimedia'/exp) AND (educat\*:ti,ab,kw OR school\*:ti,ab,kw OR curricul\*:ti,ab,kw OR training:ti,ab,kw OR clerkship\*:ti,ab,kw OR teach\*:ti,ab,kw OR instruction\*:ti,ab,kw OR learn\*:ti,ab,kw OR 'education'/exp OR 'school'/exp OR 'clinical education'/exp OR 'curriculum'/exp OR 'residency education'/exp OR 'in service training'/exp OR 'learning'/exp OR 'teaching'/exp OR 'training'/exp) AND (postgraduate:ti,ab,kw OR residen\*:ti,ab,kw OR trainee\*:ti,ab,kw OR student\*:ti,ab,kw OR intern:ti,ab,kw OR interns\*:ti,ab,kw OR fellow\*:ti,ab,kw OR 'student'/exp OR 'resident'/exp) AND (neurolog\*:ti,ab,kw OR neurophobi\*:ti,ab,kw OR neuroanatom\*:ti,ab,kw OR neurophysiol\*:ti,ab,kw OR neuropharmacolog\*:ti,ab,kw OR neuroradiol\*:ti,ab,kw OR neurosurg\*:ti,ab,kw OR neurotol\*:ti,ab,kw OR neuroendovasc\*:ti,ab,kw OR neurovasc\*:ti,ab,kw OR neuromusc\*:ti,ab,kw OR 'neurology'/exp OR 'neuroanatomy'/exp OR 'neuropharmacology'/de OR 'neurophysiology'/exp OR 'neurophobia'/exp OR 'neuroradiology'/exp OR 'neurosurgery'/exp)

**Scopus (Scopus.com) – 1683** references retrieved on 04 November 2021

TITLE-ABS-KEY(innovat\* OR novel OR simulat\* OR sbml OR "virtual reality" OR ((vr W/1 (interface OR simulator OR system))) OR gamif\* OR game\* OR "flipped class\*" OR "problem-based learning" OR "computer-based" OR "art-based" OR "arts-based" OR "narrative medicine" OR "social media" OR "education\* intervention\*" OR roleplay\* OR "role play\*" OR interactive OR "instructional technology" OR "skills model\*" OR "augmented realit\*" OR "mixed realit\*" OR podcast\* OR webcast\* OR "free online access medical education" OR foam OR (((mobile OR electronic OR software OR tablet) W/1 app\*)) OR multimedia) AND TITLE-ABS-KEY(educat\* OR school\* OR curricul\* OR training OR clerkship\* OR teach\* OR instruction\* OR learn\*) AND TITLE-ABS-KEY(postgraduate OR residen\* OR trainee\* OR student\* OR intern OR interns\* OR fellow\*) AND TITLE-ABS-KEY(neurolog\* OR neurophobi\* OR neuroanatom\* OR neurophysiol\* OR neuropharmacolog\* OR neuroradiol\* OR neurosurg\* OR neurotol\* OR neuroendovasc\* OR neurovasc\* OR neuromusc\*)

**Cochrane Library (WileyOnline; Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Cochrane Methodology Register) – 161** references retrieved on 04 November 2021

[Using Search Manager in Advanced Search]

1. MeSH descriptor: [Computer-Assisted Instruction] explode all trees
2. MeSH descriptor: [Patient Simulation] explode all trees
3. MeSH descriptor: [Video Games] explode all trees
4. MeSH descriptor: [Narrative Medicine] explode all trees
5. MeSH descriptor: [Art] explode all trees
6. MeSH descriptor: [Simulation Training] explode all trees
7. MeSH descriptor: [Computer Simulation] explode all trees
8. MeSH descriptor: [Problem-Based Learning] explode all trees
9. MeSH descriptor: [Augmented Reality] explode all trees
10. MeSH descriptor: [User-Computer Interface] this term only
11. MeSH descriptor: [Webcasts as Topic] explode all trees
12. MeSH descriptor: [Mobile Applications] explode all trees
13. MeSH descriptor: [Social Media] explode all trees
14. MeSH descriptor: [Multimedia] explode all trees
15. (innovat\* OR novel OR simulat\* OR sbml OR "virtual reality" OR ((vr near/1 (interface OR simulator OR system))) OR gamif\* OR game\* OR (flipped NEXT class\*) OR "problem-based learning" OR "computer-based" OR "art-based" OR "arts-based" OR "narrative medicine" OR "social media" OR (education\* NEXT intervention\*) OR roleplay\* OR (role NEXT play\*) OR interactive OR "instructional technology" OR (skills NEXT model\*) OR (augmented NEXT realit\*) OR (mixed NEXT realit\*) OR podcast\* OR webcast\* OR "free online access medical education" OR foam OR (((mobile OR electronic OR software OR tablet) near/1 app\*)) OR multimedia):ti,ab,kw
16. #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15
17. MeSH descriptor: [Education] explode all trees
18. MeSH descriptor: [Schools] explode all trees
19. MeSH descriptor: [Internship and Residency] explode all trees
20. MeSH descriptor: [Curriculum] explode all trees
21. MeSH descriptor: [Teaching] explode all trees
22. MeSH descriptor: [Education, Medical] explode all trees
23. MeSH descriptor: [] explode all trees and with qualifier(s): [education - ED]
24. MeSH descriptor: [Clinical Clerkship] explode all trees
25. MeSH descriptor: [Learning] explode all trees
26. (educat\* OR school\* OR curricul\* OR training OR clerkship\* OR teach\* OR instruction\* OR learn\*):ti,ab,kw
27. #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26
28. MeSH descriptor: [Students] explode all trees
29. (postgraduate OR residen\* OR trainee\* OR student\* OR intern OR interns\* OR fellow\*):ti,ab,kw
30. #28 or #29
31. MeSH descriptor: [Neurology] explode all trees
32. MeSH descriptor: [Neuroanatomy] explode all trees
33. MeSH descriptor: [Neuropharmacology] explode all trees
34. MeSH descriptor: [Neurophysiology] explode all trees
35. MeSH descriptor: [Neurosurgery] explode all trees
36. MeSH descriptor: [Neurosurgical Procedures] explode all trees
37. (neurolog\* OR neurophobi\* OR neuroanatom\* OR neurophysiol\* OR neuropharmacolog\* OR neuroradiol\* OR neurosurg\* OR neurotol\* OR neuroendovasc\* OR neurovasc\* OR neuromusc\*):ti,ab,kw
38. #31 or #32 or #33 or #34 or #35 or #36 or #37
39. #16 and #27 and #30 and #38

Note: 161 total results – 2 Reviews, 159 Trials

**ERIC (EBSCOhost) – 44** references retrieved on 04 November 2021

Search run in Advanced Search interface by entering each line into a separate search box with each search box combined with AND:

( innovat\* OR novel OR simulat\* OR sbml OR “virtual reality” OR “vr system” OR “vr interface” OR gamif\* OR game\* OR “flipped class\*” OR "problem-based learning" OR “computer-based” OR “art-based” OR “arts-based” OR "narrative medicine" OR “social media” OR “education intervention\*” OR "educational intervention\*" OR roleplay\* OR “role play\*” OR interactive OR “instructional technolog\* ” OR “skills model\*” OR “augmented realit\*” OR “mixed realit\*” OR podcast\* OR webcast\* OR “free online access medical education” OR foam OR “mobile app\*” OR “electronic app\*” OR “software app\*” OR tablet app\* OR multimedia )

AND

( postgraduate OR residen\* OR trainee\* OR "medical student\*" OR intern OR interns\* OR fellow\* )

AND

( neurolog\* OR neurophobi\* OR neuroanatom\* OR neurophysiol\* OR neuropharmacolog\* OR neuroradiol\* OR neurosurg\* OR neurotol\* OR neuroendovasc\* OR neurovasc\* OR neuromusc\* )

Note: Since ERIC is already an education-specific database, I left out the education terms and just left the student terms in. As with PsycINFO, I had to restrict student to medical students due to irrelevant results with the broader term.

**PsycINFO** **(EBSCOhost) – 389** references retrieved on 04 November 2021

Search run in Advanced Search interface by entering each line into a separate search box with each search box combined with AND:

( innovat\* OR novel OR simulat\* OR sbml OR “virtual reality” OR “vr system” OR “vr interface” OR gamif\* OR game\* OR “flipped class\*” OR "problem-based learning" OR “computer-based” OR “art-based” OR “arts-based” OR "narrative medicine" OR “social media” OR “education intervention\*” OR "educational intervention\*" OR roleplay\* OR “role play\*” OR interactive OR “instructional technolog\* ” OR “skills model\*” OR “augmented realit\*” OR “mixed realit\*” OR podcast\* OR webcast\* OR “free online access medical education” OR foam OR “mobile app\*” OR “electronic app\*” OR “software app\*” OR tablet app\* OR multimedia )

AND

( educat\* OR "medical school\*" OR curricul\* OR training OR clerkship\* OR teach\* OR instruction\* OR learn\* )

AND

( postgraduate OR residen\* OR trainee\* OR "medical student\*" OR intern OR interns\* OR fellow\* )

AND

( neurolog\* OR neurophobi\* OR neuroanatom\* OR neurophysiol\* OR neuropharmacolog\* OR neuroradiol\* OR neurosurg\* OR neurotol\* OR neuroendovasc\* OR neurovasc\* OR neuromusc\* )