

# Simulation in Learning, Education, and Training

Site maintained by: Dr. Tuncer [Ören](#),  
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## 1. Professional Organizations

### Associations/Networking

- [Where](#) Association for Business Simulation and Experiential Learning
- [CoLoS](#) Conceptual Learning of Science
- [EBEA](#) The Economics and Business Education Association
- [ETSA](#) European Training and Simulation Association CIC (ETSA)
- [IMSF](#) International Marine Simulator Forum ([Members](#))
- [ITSA](#) International Training and Simulation Alliance ([Members](#))
- [KTSA](#) Korea Training Systems Association
- [NICE](#) National Initiative for Cybersecurity Education
- [NASAGA](#) North American Simulation and Gaming Association
- [NM&SC](#) National Modeling and Simulation Coalition
- [NTSA](#) National Training Systems Association (USA) ([Membership](#))
- [SAGSET](#) The Society for the Advancement of Games and Simulations in Education and Training
- [SEE](#) The Simulation Exploration Experience
- [Simulation Australasia](#)

### Centers / Universities / Organizations

- [AXIS](#) – Flight Training Systems
- [CERG](#) (Chemical Education Research Group, Dept. of Chemistry, Iowa State Univ.)
- [CESI](#) (Center for Education, Simulation and Innovation) of Hartford Hospital
- [CSBL](#) Centre for Simulation-based Learning (for health care providers) McMaster University, Hamilton, ON, Canada
- [CSI](#) (Center for Simulation and Innovation) – University of Arizona – College of Medicine, Phoenix, AZ
- edutopia – [Game-Based Learning](#)  
– [How Online Simulations Work in the Classroom](#)
- eLearning Industry  
– [Simulations](#)  
– [Surgical Simulation Training: Is Virtual Reality The Future of Surgical Training?](#)
- ERIC (Institute of Education Sciences) – [Simulation in Adult Education](#)
- [Game and simulation-based Learning](#) Center (at Excelsior College)
- [HETI](#) (Health Education & Training Institute) - Simulation-based Education
- [ICONS](#) - An Experiential Learning Program at the University of Maryland
- [ISTC](#) (Innovation, Simulation, and Training Center) – CHEST (American College of Chest Physicians)
- JIBC (Justice Institute of British Columbia) – [Simulation Training](#)
- [LBS](#) (Learning By Simulation)
- [METI](#) (Medical Education Technologies Inc.)
- [SandBoxModel](#) - PTB Training Products (on management)

- [SCSIL](#) (Steinberg Centre for Simulation and Interactive Learning – McGill University)
  - [SERC Portal for Education](#)
    - [Why Teach with Simulations?](#)
    - [Teaching with Simulations,](#)
    - [What are Instructional Simulations?](#)
    - [How to Teach with Simulations](#)
  - [Simulation-based Education](#) (International Network of the University of Health Sciences of Cambodia)
  - [Simulation-based Education](#) (Medical) The University of Mississippi, USA
  - [Simulation Based Education MSc](#) – University of Dundee, UK
  - [Simulation-based Learning](#) – INFOPRO Learning
  - [Simulation-based Teaching](#) - UCL Medical School
  - [\(SM CISL\)](#) Stanford Medicine – Center for Immersive and Simulation-based Learning
  - [TIS](#) – TATA Interactive Systems – Changing the way the world learns
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## 2. Publications

### Bibliographies:

- [Bibliography](#): Gaming the Past – Historical Simulation Games in the Classroom
- [References and Bibliography](#) – Learning Science Through Computer Games and Simulations
- Dukes, R.L. (1997). [Simulation and Gaming and the Teaching of Sociology](#), 6th ed. (Includes books, articles, periodicals) (From Simulation & Gaming)
- Milheim, W.D. (1992). [Computer-Based Simulations in Education and Training: A Selected Bibliography](#) (Educational Technology Selected Bibliography Series).
- O'Haver, T. (2000). [Simulations and Computer Models in the Classroom](#).
- Twelker, P.A. and K. Layden (1972). [Educational Simulation/Gaming](#). Annotated Bibliography. ERIC Clearinghouse on Educational Media and Technology.

### Books/Proceedings:

- Aldrich, C. (2003). [Simulations and the Future of Learning: An Innovative \(and Perhaps Revolutionary\) Approach to e-Learning](#).
- Bell, B.S., A.M. Kanar, and S.W.J. Kozlowski (2008). [Current Issues and Future Directions in Simulation-Based Training](#). Cornell University ILR School, Center for Advanced Human Resource Studies (CAHRS) Working Paper Series 11-2008.
- Cai, Yiyu, S.L. Goei, and W. Trooster (eds.). (2017 – in Press). [Simulation and Serious Games for Education](#). Springer (Presents a collection of extended papers from the 2014 Asia-Europe Symposium on simulation and serious games)
- Chen, Yu-Lun et al. (2011). [Efficacy of Simulation-Based Learning of Electronics Using Visualization and Manipulation](#). Educational Technology & Society. 14 (2), 269–277.

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- Fripp, J. (1993). [Learning Through Simulations: A Guide to the Design and Use of Simulations in Business and Education](#).
- Honey, M.A. and M.L. Hilton (eds.) (2011). [Learning science : computer games, simulations, and education](#) / Committee on Science Learning. The National Academies Press (NAP).
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- Jones, K. (1987 - edition of 1995). [Simulations: A Handbook for Teachers and Trainers](#)
- Hertel, J.P. and B.J. Mills (2002). [Using Simulations to Promote Learning in Higher Education: An Introduction](#) (Enhancing Learning Series).
- Kincaid, J.P. et al. (2003). [Simulation in Education and Training](#). In: Applied System Simulation – Methodologies and Applications (M.S. Obaidat and G.I. Papadimitriou) (eds.), Springer, pp. 437-456.
- Luo, Jia et al. (2008). [Hurricane! - A simulation-based program for science education](#). Proceedings of the 2008 Winter Simulation Conference. pp. 2543-2548.
- Percival, F. and D. Saunders (1993). [The Simulation and Gaming Yearbook](#): The Official Yearbook of the Society for the Advancement of Games and Simulations in Education and Training (SAGSET).
- Saunders, D. (1997). [International Simulation and Gaming Yearbook: Research into Simulations in Education](#).
- Zuckerman, D.W., R.E. Horn, and P.A. Twelker (1970). [The Guide to Simulation Games for Education and Training](#). Information Resources; 2nd Revised edition edition.

### **Special Issues of Journals:**

[TR News, Number 238](#), May-June 2005. Transportation Security Training and Education: Resources, Techniques, and Strategies.

### **Articles:**

- Aebersold, M., D. Tschannen, and M. Batisch (2012). [Innovative Simulation Strategies in Education](#). Nursing Research and Practice, Hindawi, vol. 2012, article ID 765212.
- Cant, R.P. and S.J. Cooper (2009). Simulation-based learning in nurse education: systematic review. Journal of Advanced Nursing (JAN) 66(1), 3–15.
- Chieh, C. and N.K.S. Sze (2010). [Computer Animations and Simulations in General Chemistry. Summer 2000 CONFCHEM](#)
- Chwiff, L. and M.R.P. Barretto (2003). [Perspectives on simulation in education and training](#): Simulation models as an aid for the teaching and learning process in operations management. Proceedings of the 35th conference on Winter Simulation.

- Coffman, T. (2006). [Using Simulations to Enhance Teaching and Learning: Encouraging the Creative Process](#). VSTE (Virginia Society for Technology in Education) Journal, vol. 21, no. 2, pp. 1-6.
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- Evans, L.V. et al. (2014). A Comprehensive, Simulation-Based Approach to Teaching Clinical Skills: The Medical Students' Perspective, *Yale Journal of Biology & Medicine*, vol. 87 (4): 575-581.
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- Merkt, O. (2015). [Towards a framework for educational simulation in management science and economics](#). Winter Simulation Conference.
- Ou, K., P. Felicia and D. Kane (2013). [Using simulations and game-based learning for information skills training](#). *Qualitative and Quantitative Methods in Libraries (QQML)* 2: 107-118.
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- Smeds, R. (2003). [Simulation for accelerated learning and development in industrial management](#), *Production Planning & Control*, 14:2, 107-110.

### **Research Reports/Working Papers:**

- Bell, B.S., A.M. Kanar, and S.W.J. Kozlowski (2008). [Current Issues and Future Directions in Simulation-Based Training](#). Cornell University ILR School, Center for Advanced Human Resources Studies (CAHRS) Working Paper Series. Working Paper 08-13.
- Damassa, D.A. and T.D. Sitko (2010). [Simulation Technologies in Higher Education: Uses, Trends, and Implications](#). Research Bulletin 3, 2010. Boulder, CO: EDUCAUSE Center for Applied Research.
- [Evaluation of a Mobile Simulation Training Technology – PRISim](#) (2003). A Report to the National Institute of Justice.

**From Wiki / Wikipedia:**

- [Instructional simulation](#)
- [List of Educational Software](#) (By subject)
- [Simulation and games in economics education](#)
- [Simulation and gaming](#)
- [Simulation-based learning](#)
- [Simulation video game](#)
- [Training simulation](#)

**From YouTube**

- [Simulation](#)
  - [Educational Simulations](#)
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### 3. Conferences / Professional Courses

#### 2017

- 2017 March 8-10, Myrtle Beach, SC, USA  
[ABSEL 2017](#) - 44<sup>th</sup> Annual Conference
- 2017 May 16-18, Rotterdam, The Netherlands  
[ITEC 2017](#) -

#### 2016

- 2016 June 16-17, Porto, Portugal  
[SGAMES2016](#) - 6th EAI International Conference on Serious Games, Interaction and Simulation
- 2016 Nov. 2-4, San Antonio, Texas, USA  
[MFT 2016](#) - Military Flight Training USA
- 2016 Nov. 28 – Dec. 2, Orlando, FL, USA  
[IITSEC 2016](#) - Interservice/Industry Training, Simulation & Education Conference
- 2016 Nov. 30 – Dec. 2, Orlando, FL, USA  
[Training 2016](#) - Training Magazine's Innovations in Training 2016
- 2016 Dec. 8-10, Chapel Hill, NC  
[Introduction to Simulation-based Teaching](#), American College of Surgeons

#### 2010

- Nov 29-Dec 2, Orlando, Florida  
[IITSEC 2010](#) - Interservice/Industry Training, Simulation & Education Conference
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## 4. Software

### Software: Simulation-based General Educational Resources

- [50 Great Sites for Serious, Educational Games](#)
- [Center for Polymer Studies](#) (Estimation of pi, Buffon's needle problem, Monte Carlo methods)
- Education World – [Simulations Engage Students in Active Learning](#)
- [Educational games and simulations](#) (SlideShare)
- [Educational Simulations](#) - Web site review project
- edutopia – Made with Play: [Game-Based Learning Resources](#)
- [edutopia](#) – Schools Use Games for Learning and Assessments
- [EvoTutor](#) – Resource for Interactive Simulations of Evolutionary Processes
- [GoVenture](#) - Educational Games and Simulations
- [Harvard Business Publishing](#) for Educators – Teaching with Simulations
- Online Labs in [Chemistry](#), [Physics](#), [Biology](#), [Anatomy](#), [Geology](#), [Astronomy](#), [Design](#), [Math](#)
- Pedagogy in Action – [Teaching with Simulations](#), [Why Teach with Simulations?](#)
- PNET Interactive Simulations: [Physics](#), [Biology](#), [Chemistry](#), [Earth Science](#), [Math](#)
- [Simulation Training Systems](#) – Learning through experience

### Software - from Associations

- [ABSEL](#) - Association for Business Simulating and Experiential Learning
- [USIP](#) - United States Institute of Peace

### Software - by Topics

#### Aircraft

[fsPilotShop](#)

#### Astronomy

[Earth's motion](#)

[How the Earth was made?](#)

#### Business

[15 Business Simulation Games](#) Could Build Hands-on Business Experience

#### Chemistry / Chemical Engineering

[CACHE](#) – Computer Aids in Chemical Engineering

[CERG](#) (Chemical Education Research Group, Dept. of Chemistry, Iowa State Univ.)

[Chemistry Simulations](#) (Royal Society of Chemistry and the PhET)

#### Helicopter

[New simulation software improves helicopter pilot training](#) – Technical University of Munich

#### Justice

[Praxis](#) – Online Training Simulations



[Simulations at JIBC](#) (Justice Institute of BC)

## **Management**

[ChainSIM](#) - Supply Chain Management

## **Military**

[C4I Training Simulations](#) (Ternion)

[Zen Technologies Limited](#) – Training simulators

## **Peace**

[The Ribbon Simulation Game](#) (BCTF100)

## **Physics**

[Interactive Physics and Math with Java](#)

[Physics Curriculum & Instruction](#) – Physics Simulation Software

[PhET](#) - Physics Education Technology

[Physics Lessons](#)

[PhysicsWorld](#)

[Physlets](#) - Physics Applets

### **Physics: Acoustics**

[Physicsweb](#) – Acoustics

### **Physics: Atoms**

[Interactive Physics and Math with Java](#): Physics of Atom

[iPhysics](#): Atomic Physics

[Physicsweb](#): Physics of Atoms

### **Physics: Electricity, Electronics, Magnetism**

[Crocodile Physics](#) - Electricity and Electronics

[PH2200](#) - University Physics II - Electricity & Magnetism

[Physicsweb](#) - Electronics, Electromagnetism

[Virtual Labs & Simulations](#) - Electricity & Magnetism

### **Physics: Energy, Heat, Thermodynamics**

[iPhysics](#): Heat

[Physicsweb](#): Thermodynamics

### **Physics: Fluid Dynamics**

[iPhysics](#): Fluids

[Physicsweb](#): Fluid Dynamics

### **Physics: Mechanics**

[Crocodile Physics](#) - Force and Motion

[Interactive Physics and Math with Java](#): Mechanics

[iPhysics](#): Mechanics

[PhET](#) - Physics Education Technology - Mechanics

### **Physics: Nuclear Physics**

[Physicsweb](#) - Nuclear Physics

### **Physics: Optics**

[Crocodile Physics](#) – Optics

[iPhysics](#): Light

[Interactive Physics and Math with Java](#): Light

**Physics: Oscillations and Waves**

[Crocodile Physics](#) - Oscillations and Waves

[Interactive Physics and Math with Java](#): Oscillations

[iPhysics](#): Waves (with several classes of examples)

[PhET](#) - Physics Education Technology - Waves

**Physics: Pendulum**

[Double pendulum](#)

[Simple pendulum](#)

**Physics: Relativity**

[Physicsweb](#): Relativity

**Physics: Sound**

[iPhysics](#): Sound

[PhET](#) - Physics Education Technology - Sound

**Physics: Superconductivity**

[Physicsweb](#): Superconductivity

**Physics: Theoretical Physics**

[Physicsweb](#): Theoretical Physics

**Space**

[7 Space simulators](#) that let you explore the universe

[Christa McAuliffe Space Education Center](#)

[NASA Space Educational Simulations](#)

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## 5. Modeling and Simulation (M&S)

### Professional Groups

[Associations/Organizations/Committees, Centers/Groups, Military Organizations](#)

### Ethics

Publications and presentations of Dr. Tuncer Ören on [Ethics](#)

A [Code](#) of Professional Ethics for Simulationists (At [SCS](#))

[The Ethics of a Simulated Universe](#), by Rick Searle, The Institute for Ethics and Emerging Technologies

[The Ethics of Computer Game Design](#), by M. Sicart

[The Ethics of Simulation](#), by A.B. Smith and S.E. Lammers, Lehigh Valley Health Network

From Search Engines:

Bing: "[ethics of simulation](#)"

Google: "[ethics of simulation](#)"

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## 6. Additional info

From search engines:

### Bing:

simulation-based: [learning](#), [adult learning](#), [education](#), [teaching](#), [training](#);  
[educational simulation](#);  
[online learning with simulation](#)  
[simulation and games for education](#)  
[simulation in ethics education](#)  
[simulation in justice education](#)

### Google:

simulation-based: [learning](#), [education](#), [teaching](#), [training](#)  
[educational simulation](#)

### Lessons Planet:

[simulation](#)  
[archeology simulation game](#)

### SemanticScholar:

simulation-based: [learning](#), [education](#), [teaching](#), [training](#);  
[educational simulation](#)