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Simulation games are a recent innovative technique that can be used in the classroom. In the past these games have been used by the military, by industry, and by social scientists. Simulation emphasizes the inquiry approach to learning. Each student is an independent and individual learner who can interact with others and react to different situations. Advantages claimed for simulation include added motivation, improvement of problem-solving ability, emphasis on communication, and an interdisciplinary approach rarely achieved otherwise. Objections to the use of these games include fear that they breed conformism, emphasize winning over learning, and threaten discipline. An appendix lists 85 commercially produced games with the academic use of the game and the grade level to which it applies and the manufacturer from whom it can be obtained. A bibliography of 48 items covers many approaches to simulation games. (RP)

# RESEARCH BRIEF

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THE NAME OF THE GAME--SIMULATION

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## The Name

A recent innovative technique that changes the lecturer-listener/questioner-answerer relationship in the classroom is the employment of simulation games. Simulation is a micromimetic model of the real world in a game situation. It is the re-enactment of an observable problem in a miniature of a social system for which the learner has to take action.

Simulations were developed to enable social scientists to test their theories of social interaction. Since the variables in the micromimetic model could be easily manipulated, the researcher could validate conceptual hypotheses. Starting in 1950, industry began using simulation games for management selection and training, personnel development, and market testing of new products. Recently, educators have adopted the technique to the teaching process using the micro-relationships of the interaction to provide learning experiences.

Simulation situations can be war games, business games, mathematical games, word games, international politics, teaching situations, or school administrative problems. They may be simple, or very complex. The essence of simulation is the semblance of reality. However, according to Abt, "Simulation games aren't designed to reproduce reality, but rather to give students realistic insights into the forces producing a situation."<sup>1</sup>

Simulation may be used in the elementary or secondary schools as a basis of teaching mathematics, social studies (especially history, political science, and economics), communication skills, business techniques and logic. It lends itself to core curriculum or multi-disciplinary approaches. Simulation may be used as an in-service technique to improve instruction or administrative procedures in education.

A characteristic of simulation is high participant interest; students become highly motivated. Research has reported greater energy expenditure and indicated a greater degree of resourcefulness in simulation situations than in traditional classroom activities.<sup>9</sup> There has been a disinclination by teachers to use this technique; exponents of simulation techniques explain this attitude as the result of the de-emphasis of the teacher's starring role. From actual experiences,<sup>24</sup> it has been shown that more is demanded of the teacher. The new teacher role is primarily one of guidance and supervision, de-emphasizing the old stereotyped role of judge and jury. Student success in the game depends upon how well the teacher achieves this role.

#### The Game--Utilization

Simulation emphasizes the inquiry approach to learning. Each student is an independent and individual learner who is able to interact with others, ask questions relevant to himself, be self-directive, react to real situations, and view himself as a part of a total functioning.

Abt says, "Learning from games occurs in three different phases: Game design, game play, and game analysis. Game play ideally takes place at least three times - the first to learn the facts of the problem; the second to learn cause-effect relations; and the third to learn the costs, benefits, risks, and opportunities of alternate strategies."<sup>1</sup>

The technique is as effective with "slow learners" as it is with talented youth. Boocock reports: "Because our field work has suggested that gaming may be an especially valuable technique for 'problem' children - minority group youngsters or the culturally deprived, unmotivated students, youngsters with low verbal skills - many of our current experiments focus upon such youngsters."<sup>5</sup>

Available games can be readily adapted to specific situations, becoming less complex or gaining a greater degree of sophistication as the occasion demands. Games constructed for high school purposes have been used successfully not only in the upper elementary grades, but also in colleges.

The game may be played with the simplest of materials--found in every classroom, or it may utilize some or all of the equipment and techniques of audio-visual communication--TV, radio, video components, film, recorders, and, recently, electronic data processing.

Advantages claimed for simulation (over the lecture/catechism techniques) are:

1. Students are placed in a continuing decision-making situation, helping them become self-motivated.
2. Students perceive themselves as involved in a real-world problem (in role-playing, the student knows he is play-acting) making high motivation possible.
3. Student decisions are based upon information gathering, with analysis of data a requirement; a pragmatic set of attitudes tend to be produced and the scientific problem-solving approach inculcated.
4. Extensive writing is required with emphasis upon clarity, brevity, and fluency; the student must communicate his ideas succinctly.
5. Self-discipline is outstanding; students set their own tasks and complete them of their own free will.
6. The games bridge school subject disciplines and give the student an integrated experience in the otherwise discipline separated curriculum.

Not all educators are proponents of this technique; objectives voiced to utilizing simulation games are:

1. They may encourage quiescent and conformist attitudes by students; participants may become acceptant of what is simulated rather than questioning it,
2. There may be a tendency to place heavy emphasis upon winning rather than achieving the real objectives of the learning experience,
3. The use of the games by inexperienced or inept teachers might emphasize play attitudes in students rather than a learning approach, and,
4. Classes become so engaged in the game that the noise level increases appreciably, and unless rules are set, and enforced, discipline may get out-of-hand.

Not only are there commercial games being developed for students from kindergarten to junior college level, but these techniques are being applied to teacher-training, in-service programs, and the development of administrative leadership. Research has linked the simulation models to the computer, giving a wider span of variables to which the participant may react and allowing for greater individualization through programmatic branching.

One of the most appealing features of simulation to the innovative teacher is the tendency of any game selected to lend itself to variation and revision. Once begun, a game can be extended and greater complexity and sophistication introduced with relatively little effort--the only restriction becomes human creativity and imagination. It has been the

experience of teachers who begin by using prepared games that their individualic demands soon exceed what the market offers, and they begin designing their own games. High school students also have designed games--it would be impossible to objectify the value of such a learning experience. Certainly, it is a unique approach to teaching that cannot be duplicated by the traditional methodology. Abt is convinced,..."The most educational way of obtaining [games] is to design them yourself."<sup>1</sup>

If a teacher desires to modify, redesign, or create a new game, here are a few guides that may help:

1. Determine the feasibility of such a project--in terms of planning time, implementation time, and evaluation time,
2. Set objective, measurable goals for the program--make certain that the students know these goals,
3. Don't be too ambitious--start with a manageable segment,
4. Plan thoroughly--prepare all materials necessary, debug where possible, implement at an appropriate time, and select and maintain a consistent teachers/pupil relationship,
5. Measure results in terms of goals, and
6. Determine modifications and revisions necessitated by results.

6  
SIMULATION GAMES AVAILABLE

Name	Academic Use	Grade Level	Author	Manufacturer
1. URB-COIN	Political Science (Military Police School)	High School College	Abt (Associates)	Abt (Associates) 55 Wheeler Street Cambridge, Mass.
2. Consumer	Economics	Junior High and Senior High	Zaltman	
3. Parent-Child Game	Family Life Education		Johns Hopkins U.	Academic Games Associates 3505 Charles Street Baltimore, MD.
4. Life Career	Vocational Guidance		Boocock	
5. Community Response Game		High School	Inbar	
6. Disaster	Social Studies		Boocock	
7. POTLATCH	Economics: History	Junior High	Abt (Associates)	American Anthropological Association 1530 P Street, N.W. Washington, D. C.
8. 4-H Game of Democracy				
9. Legislative Game	Social Studies	High School	Colman	Bookstore National 4-H Center 7100 Connecticut Avenue Washington, D. C.
10. Sumerian Game				
11. Sierra Leone Development Project	Economics	Upper Elementary	Wing	Board of Cooperative Educational Services Northern Westchester County, N. Y.
12. Toytown		Junior & Senior High School	Abt (Associates)	
13. KOLKOZ				
14. SEPEX	Electronics	High School	(Unknown)	Central Michigan Educational Research Council

Name	Academic Use	Grade Level	Author	Manufacturer
15. Transportation	Political Science	College	Abt (Associates)	Under Secretary for Transportation Department of Commerce Washington, D.C.
16. Empire	Political Science	Junior and Senior High School		
17. Seal Hunting				
18. Caribon Hunting		Elementary		
19. Bushman Hunting	Social Studies/History			Educational Services, Inc 44-A Brattle Street Cambridge, Mass.
20. Slave Trade			Abt (Associates)	
21. Steam		Junior High		
22. Manchester				
23. GALAPOGO	Darwinian Evolution	Senior High		
24. SIMPOLIS	Political Science	College		
25. Mathematics	Mathematics (Slow Learners)	High School	Abt (Associates)	D. C. Heath and Company 475 South Dean Street Englewood, New Jersey

Name	Academic Use	Grade Level	Author	Manufacturer
26. Get Set Reading Games	Reading	Kindergarten and 1st Grade	Boocock	Hough-Mifflin Company 2 Park Street Boston, Mass.
27. VOTES				
28. Disunia	Political Science	High School	Yount and de Kock	El Capitan High School P. O. Box 698 Lakeside, California
29. Sunshine, California				
30. Labor vs. Management	Political Science	High School	Gearon	Chicago Public Schools Chicago, Illinois
31. War or Peace				
32. Radicals vs. Tories				
33. Spanish American War	Political Science:History	High School	Dal Parto and Lundstedt	Mt. Pleasant High School San Jose, California
34. Haymarket Court and Trial				
35. Game of Checks and Balances				
36. Propaganda Game	Political Science	High School	Allen and Greene	Nova High School Ft. Lauderdale, Florida
37. Great Game of Legislature			Allen	
38. Landfall				
39. Neighborhood	Social Studies	Elementary	Abt (Associates)	Wellesly Public Schools Wellesly, Mass.
40. Pollution				

Name	Academic Use	Grade Level	Author	Manufacturer
41. Executive Action Simulation	Business Management	High School and College	Herron	Prentice-Hall, Inc. Englewood, Cliffs, N. J.
42. DEEP	Economics	High School	Joint Council of Economic Education	Evelyn Schwartz Research Librarian 1212 Sixth Avenue New York, New York
43. International Simulation (INS)	Political Science	High School and College	Guetzkow and Cherryholmes	Science Research Associates, Inc. 259 East Erie Street Chicago, Illinois
44. Teaching Problems Laboratory	Teacher Training	College	Criuckshank	
45. PLANS	Political Science: Pressure Groups	High School	Davis, Boguslant, and Glick	Systems Development Corporation Santa Monica, California
46. CLUG (Cornell Land Use Game)	Social Studies: Geography	Graduate Students (College)	Feldt	Systems Gaming Associates 246 Updike Road Ithaca, New York
47. Professional Negotiations in Education	Education: Administration	College	Harvat	University Council for Educational Administration 65 South Oval Drive Columbus, Ohio
48. Madison School District			Wynn	
49. Whitman Simulated School			Culbertson	
50. Mr. Land's Sixth Grade	Education	College	Twelker	Teaching Research Oregon State System of Higher Education Monmouth, Oregon

Name	Academic Use	Grade Level	Author	Manufacturer
51. Arrowhead	Education: Administration	College	University of California California	University of California Berkeley, California
52. Market	Economics	4th Grade	Rader	Industrial Relations Center University of Chicago Chicago, Illinois
53. Economy		5th Grade		
54. Machinist	Education	College	Abt (Associates)	Harvard University Cambridge, Mass.
55. Economic Game	Sociology: Economic Interaction	High School	Colman	John Hopkins University Baltimore, MD.
56. Consumers Game				
57. Bureaucracy Game				
58. INTOP (International Operation Simulation)	Business Administration	Graduate Student (College)	Thorelli, Graves and Howells	Graduate School of Business Indiana University Bloomington, Indiana
59. Manufacturing Game	Business	Junior College	Abt (Associates)	Johnson and Wiles Business College Abbot Park Place Providence, Rhode Island
60. American National Government Simulation	Sociology	College and High School (Has Been Successful with 7th Grade)	Garvey	Department of Social Science Kansas State Teachers College Emporium, Kansas

Name	Academic Use	Grade Level	Author	Manufacturer
61. Friendliness - Unfriendliness	Social Studies: Psychology	Upper Elementary	Lippitt	Michigan Elementary Social Science Education Project University of Michigan Ann Arbor, Michigan
62. People and Groups Different From Ourselves				
63. Getting Work Done Alone and In Groups				
64. Social Influence				
65. Decision Making				
66. Personal and Group Development				
67. WORDSWORTH, LTD.	Social Studies: Language Arts	High School	Meier	Mental Health Research Institute University of Michigan Ann Arbor, Michigan
68. SIMSOE	Sociology	College	Gamson	Department of Sociology University of Michigan Ann Arbor, Michigan
69. Metropolis	Political Science	Graduate Students (College)	Duke	Michigan State University East Lansing, Michigan
70. College and University Planning Game	Sociology: Leadership Planning	College	Farbes	Office of Institutional Studies and Development New Mexico State University University Park, New Mexico

Name

Academic Use

Grade Level

Author

Manufacturer

71. Simuland

Political Science

College

Scott

University of North  
Carolina  
Chapel Hill, North  
Carolina

72. SIP (Simulated International  
Processes)

Political Science

College

Guetzkow

International Relations  
Program  
Northwestern University  
1834 Sheridan Road  
Evanston, Illinois

73. Portsville

Social Studies:  
Geography

High School

(NSF Grant)

Urban Studies Center  
Rutgers University  
New Brunswick, New Jersey

74. Bankloan

Business  
(Banking Seminars)

College  
(Banking Firms)

U.S. Trust Company  
New York, New York

76. CRISIS

Social Studies

High School  
(Crisis and  
Napoli Have  
Been Successful  
in 7<sup>th</sup> and 8<sup>th</sup>  
Grades)

WBSI

Western Behavioral  
Science Institute  
1150 Silverado  
La Jolla, California

78. SITTE

Business Administration

Sprague

79. BMG

Andlinger

Name	Academic Use	Grade Level	Author	Manufacturer
80. Wff'N Proof	Logic		Allen, Allen, and Miller	Wff'N Proof Box 71 New Haven, Connecticut
81. Wff	Beginning Logic		Allen	
82. ON-SETS	Arithmetic			
83. Equations		Strategy		
84. TAC-TICKLE	Sociology	Upper High School and College		Davison
85. Public Opinion Game				

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