TABLE 8 Models of the Simulations/Games (Cont)

Simulation	Model Characteristics	Evaluation of Models
	urban plan and a plan for the new property. The task of planning Futura City is to be achieved through participation of diverse groups having conflicting vested interests. Presentation of the plan to a constituent assembly, reevaluation, bargaining, debate, and a final vote conclude the simulation, resulting in consequences for major systems such as housing, transportation, and industry	

the written materials accompanying the simulation/game to help clarify the designer's *intended* educational purposes, and we have rated the degree to which these objectives are achieved. Second, we have analyzed the degree to which a variety of skills are *actually* involved in participation. We have classified these skills into eight general categories, which summarize an analysis of the knowledge and skills developed through participation. Those simulations/games involving the highest levels of the component skills are listed after each category:

(1) Research: *Utopia, Cope, Dynamic Modeling of Alternative Futures, Prospects, Futuribles*
(2) Computation: *Simulating the Values of the Future*
(3) Predicting probabilities: *Cope, Simulating the Values of the Future, Futuribles, Dynamic Modeling of Alternative Futures, Prospects*
(4) Generating alternative possibilities: *Dynamic Modeling of Alternative Futures, Utopia, Futuribles, Cope, Prospects*
(5) Clarifying preferabilities: *Futuribles, Dynamic Modeling of Alternative Futures, Simulating the Values of the Future, Future Planning Games, Cope, Utopia*
(6) Modes of interaction: *Future Planning Games, Utopia, Edplan, 2000 A.D. Futura City, Hybrid Delphi Game, Simulating the Values of the Future*
(7) Interpersonal interaction: *Utopia, Hybrid Delphi Game, Future Planning Games, Edplan, Dynamic Modeling of Alternative Futures, Simulating the Values of the Future*
(8) Evaluation: *Dynamic Modeling of Alternative Futures, Cope, Future Planning Games, Simulating the Values of the Future, Utopia, Hybrid Delphi Game*

Table 9 covers the intended educational objectives and the success with which they are realized. Table 10 presents an analysis of the skills and activities the simulations/games involve

TABLE 9 Stated Objectives of Simulations/Games

Simulation	*Objectives*	*Degree of Success in Achieving Stated Objectives*
Futuribles	To help individuals (1) get acquainted with future possibilities, (2) share feelings about the future; (3) clarify own values regarding the future; (4) create visions of "hoped for" futures; (5) write scenarios of how the future may happen; (6) select priorities for group long-range planning; (7) choose preferred futures for daily work, service, and for other areas; and (8) anticipate the future with "joy and commitment."	High
Dynamic Modeling of Alternative Futures	Delphi: Achieve consensus through anonymously and objectively estimating the likelihood of particular events occurring within a given field by some future date. *Alternative Futures Analysis and Review*: Achieve group consensus through public and personal means on those future events within a field that are most desirable or preferable to the participants in the simulation. *Identification Simulation*: Increase awareness of the educational needs for the gifted and talented through the use of a one-hour activity which demonstrates the inappropriateness of Intelligence Quotient scores used alone as an identification criterion. *Label Game*: Examines models of the life of the handicapped on which the game was patterned and describes the translation of those models into game format; provides an affective experience in the negative social psychological consequences in life as a function of various assigned "labels." *Toward Walden Two*: Basic components of an operant conditioning-based social system are enacted and observed in a classroom simulation. Participants learn basic principles of operant conditioning while trying to apply the principles to others, within the context of a token economy, i.e., micro-society based on operant conditioning.	High
Simulating the Values of the Future	Through the operations research techniques of simulation and the use of expert judgment, the participant (a) makes decisions affecting the character of the environment, (b) estimates the societal consequences of those decisions, and (c) evaluates the desirability of these consequences.	High

TABLE 9 Stated Objectives of Simulations/Games (Cont)

Simulation	Objectives	Degree of Success in Achieving Stated Objectives
Space Patrol	Participants create the dimensions of a science fiction adventure—its scenario, roles, alien capabilities, and rules—and then experience these fantastic possibilities through their presentation in a role-playing war-game framework. Each participant "faces tribulations that would titillate a Flash Gordon and baffle a Captain Kirk." Force, wit, and intelligence "are the weapons of redemption." The objective is entertainment.	Medium
Hybrid Delphi Game	Participants experience the very real conflicts in values, priorities, and directions that arise during negotiation of desirable futures; determination of who benefits from a particular future, and exploring how one gets from the present to the future.	Medium
Future Planning Games	While students confront controversial social issues existing presently, or potentially impinging upon their planning of their personal future roles, the primary objectives sought are values disclosure, values clarification; constructing a life philosophy, problem solving; debate/discussion, research of data to support positions; an introductory exposure to such tasks as writing a marriage contract, determining societal growth/no growth priorities, and resource allocation; philosophy; formulating foreign policy on a specific issue, dealing with death; and planning prisons	High
Cope	Through creative or productive task requirements participants may be led to (1) think more about the different alternatives we might have for life in the future; (2) solve some problems that arise personally, for the city, and the universe; (3) learn a completely new (but not entirely foreign) language to help them communicate with other game participants; (4) evaluate new forms of technology for their effects on human beings, and (5) attempt to cope with an exceedingly rapid pace of change.	Medium
Utopia	*Knowledge* (1) understanding the four systems basic to any society and some of the elements of each system and (2) understanding the problems of human motivation and behavior that forming an ideal society poses. *Skills*. (1) using the library for research, (2) using parliamentary procedure moves to promote one's ideas, (3) using oral language in an organized fashion in discussions with, and presentations to, small groups. *Attitudes* (1) appreciating the complexity and challenge of forming an ideal society, (2) desiring to work toward an ideal society, regardless of the difficulties; and (3) feeling that individual contributions are important in a society, even if they are not totally accepted.	High
Prospects	To help participants examine their career, evaluate their training needs, and develop specific action plans to maintain and enhance the relevance of their skills, decreasing the chances of potential obsolescence The process provides an opportunity to learn how to give and receive helpful feedback.	High
Edplan	It provides insight into the political nature of educational planning and decision-making; provides a working example of politics in action; and provides an example of how justifiable are all possible points of view on some educational issues	Medium
Edventure II	This career guidance game is designed to dynamically demonstrate four principles (1) the range of educational options open to people now and as of 1981 is very large, going far beyond conventional academic programs and training for trades; (2) obtaining an education is a life-long process, it does not stop after high school or after college; (3) types of educational offerings must be suited in content and instructional style to the types of individual learner in order for learning to be successful; (4) failure as well as success is to be anticipated as a possible outcome of any educational situation	High
2000 A.D. Future City	To give students an opportunity to: (1) demonstrate their understanding of future planning; (2) become involved in futurist decision-making activities, including (a) clarification of values, (b) analysis of trend indicators, (c) evaluation of priorities, (d) scenario interpretation, (e) trend extrapolation, (f) group interaction; (3) understand the different roles of key urban groups and their influence in shaping the future of America's cities.	Medium

TABLE 10 Knowledge, Skills, and Activities

Knowledge, Skills, Activities	*Futuribles*	*Dynamic Modeling of Alternative Futures*	*Simulating Values of the Future*	*Space Patrol*	*Hybrid Delphi Game*	*Future Planning Games*	*Cope*	*Utopia*	*Prospects*	*Edplan*	*Edventure II*	*2000 A.D. Futura City*
Research												
Gathering information	—	—	—	—	—	L	H	H	H	—	—	—
Extensive reading	—	L	L	H	—	M	H	H	L	—	L	M
Alert observation	—	H	—	—	—	—	—	—	—	—	—	—
Skillful listening	L	H	L	—	—	—	—	—	—	—	—	—
Generating hypotheses	H	M	L	—	—	L	M	H	—	—	—	—
Measurement/ experimentation	—	H	—	—	—	L	—	L	—	—	—	—
Convergent thinking	H	H	H	M	M	H	H	H	H	M	H	H
Divergent thinking	H	H	H	H	H	H	H	H	H	—	—	M
Preparing reports/ writing	—	L	—	—	—	M	H	H	L	—	—	—
Memory	—	L	—	—	—	—	L	—	—	—	—	—
Computation												
Calculating mathematically	—	L	L	L	—	—	L	—	—	—	L	—
Predicting Probabilities												
Trend extrapolation	M	M	H	—	—	M	H	—	H	—	—	L
Cross impact analysis	M	M	H	L	—	L	H	H	H	—	—	L
Delphi consensus	H	H	H	—	—	L	H	—	—	—	—	—
Generating Alternative Possibilities												
Brainstorming	M	H	L	—	—	—	M	H	—	—	—	—
Wishful scenarios	H	H	L	H	—	L	M	H	H	H	—	L
Alternative pathways	M	H	L	H	—	L	H	M	H	L	H	M
Clarifying Preferabilities												
Planning goals/ strategies	H	H	H	H	—	H	H	H	H	H	H	H
Values clarification	H	H	H	H	H	H	H	H	H	H	M	L
Delphi event desirability consensus	H	H	H	—	H	H	H	H	—	—	—	M
Relevance tree analysis	L	L	L	—	—	—	—	—	—	—	—	—
Modes of Interaction												
Small group discussion	H	H	H	H	H	H	H	H	L	H	L	H
Debate	—	H	H	—	H	H	L	H	—	H	—	H
Large group discussion	—	—	H	—	H	H	L	H	—	H	—	H
Parliamentary procedure	—	—	—	—	—	H	L	H	—	H	—	H
Voting	L	H	H	—	H	H	L	H	—	H	—	H
Interpersonal Interaction												
Persuading	L	H	H	—	H	H	M	H	—	H	—	M
Bargaining/negotiating	—	H	H	—	H	H	M	H	—	H	—	H
Helping/supporting	L	M	L	—	M	M	M	H	L	L	L	L
Coalition formation	—	M	M	L	M	M	L	H	—	H	—	L
Evaluation												
Criterion-referenced test	—	H	—	—	—	—	M	—	—	—	H	H
Norm-referenced test	—	H	—	—	—	—	—	—	—	—	—	—
Evaluation of simulation	—	H	H	L	—	—	H	L	—	—	—	—
Self-evaluation	H	H	H	L	H	H	H	H	H	H	L	L
Evalutation of peers	—	H	—	L	H	H	H	H	—	L	L	M
Descriptive disclosure of present status	H	L	L	—	L	H	—	—	H	—	—	—

Key: H = High
M = Medium
L = Low

ROLES

Types of Roles

Descriptions of the types of roles appear in Table 11. Of all the simulations/games, the *Future Planning Games* will provide players with roles and role-playing opportunities closest to most individuals' real-life experiences or general information. Because these games deal with controversial social issues, they often produce high levels of arousal, debate, and discussion. At the other extreme, *Space Patrol* broadens the range of roles and character types to provide for weird extraterrestrial life forms one might imagine encountering. Simulation/gaming designers will find the rich variety of dimensions of people and situations in *Space Patrol* potentially useful in structuring their thinking about scenarios for their own simulations. *Prospects* does not involve role playing, since the individual players apply this career planning simulation to themselves.

TABLE 11 Types of Roles

Simulation	Roles
Futuribles	Explorers; Planners; Students; Self
Dynamic Modeling of Alternative Futures	Self; "Experts" on a given topic; member of Presidential Advisory Board for identification of Gifted and Talented Youth; Individuals "labeled" either normal or stigmatizing labels which emphasis disabilities and not ability—congenitally defective, emotionally disturbed, mentally retarded; operant conditioning behavioral engineers
Stimulating the Values of the Future	Planning Group, Social Predictors; Evaluation Committee Members; Teenagers; Housewifes; Middle class Employed; Persons over 65; Cultural Elite; Poor
Space Patrol	Game Master, Aliens and Creatures of the possible types: mollusk, plant, arthropod, amphibian, reptile, mammal, avian exotic, mechanical polymorph, crystalline, gaseous energy, Characters may be specially constructed along the following dimensions, with the number of variations possible specified: Metabolism (9), Special Capabilities (11 including increased hearing, touch, sensitivity, telescopic vision), Psionics (7 including empathy, telepathy, telekinesis, clairvoyance, mind control, teleportation), General Shape (10 including monoped to octoped, wings, tentacles, etc.); Sex (5 types); Size (13 sizes); Cyborg replacements (13 including limbs, structure, or sensory abilities); Special Weapons and Resources, Attitudes (5 levels from friendly to hostile)
Hybrid Delphi Game	Self
Future Planning Games	Member of Presidential Commission on Moral issues; Member of family facing euthanasia decision, Social Philosopher; Neighborhood Protection Committee Member; ERA Advisory Commission Member; 2050 A.D. Member of National Commission on Ecology; Warden; Prison Designer; Member, Immigration Review Board; Designer of a mythical All-American Hero, Supporters of Populist Party or Reformist Party, debating Social Security issues; 2300 A.D. Economic System Planner; Foreign Policy Commission member, faced with specifying a developing nations policy decision or deciding a war issue; six alternative world orders, and two alternative philosophies of cooperation/competition; Cabinet Member making U.S. budget decisions; Person choosing capitalist, welfare, or socialist society; Member of a family of following type communal, polygamous, monogamous, same-sex couples, professional parents, single parenthood; materialist, Christian, humanist, atheist, guru, hippie
Cope	Intellectuals, Engineers; Human Services Specialists; Mechanical Services Technicians, Innovative Technologist Specialist; Life Quality Technician; Computer Services Assistants; Director of Human Services, Director of Mechanical Services, Director of Innovative Technology; Director of Life Quality
Utopia	Subjects in the "Sunrise" Cabin Communal Experiment; "Expert" Planners for Morality, Economic, Technological, and Political Systems; Parliamentary Procedure Chairperson; Committee for the "Declaration of Utopian Commitment"
Prospects	Self
Edplan	Principal of Elementary School, High School Principal, Superintendent of Schools, Teacher's Bargaining Association Representative; Student Council President; Taxpayer; PTA Member; School Board Member; City Councillor; Federal Aid Representative; School Board Member
Edventure II	Female, 28, Divorcee: Male, 41, Part-Time Worker. Female, 54, Housewife with Grown Children; Male, 56, Supermarket Owner; Female, 55, Widow of Astronaut; Male, 32, Retailer; Female 18, High School Graduate; Male, 27, B.A. in Physics; Male, 49, Divorcee; Female 58, Widow, Male, 19, Factory Worker; Female, 52, Spinster Elementary Teacher; Male, 29 Assistant Personnel Manager; Female, 19, Single Parent; Female, 36, Stenographer
2000 A.D. Futura City	Chairman, Constituent Assembly; Professional City Planners; Business and Industry Group Members; Black Activists; Private Land Developers and Construction Firms; Civil Rights Organization; White Middle-class Ethnic Families; Environmental Protection Organization; Citizens Group for Urban Life Renewal

Role Descriptions

Role playing in a simulation is greatly influenced by the way goals, character, and personality are described. Limited detail provides for interpretation and elaboration of the role according to the player's whims, while lengthy detail can be supplied to ensure the performance of a role in a manner faithful to the character upon which the role was based. Role descriptions presented barriers to effective role playing in *2000 A.D. Futura City*, because the role definitions were inadequate for players who are unfamiliar with such roles as city planners, land developers, or environmental protection agency representatives. In the case of the other simulations/games, the level of detail provided was generally appropriate.

Role Chracteristics and Flexibility

Three role-playing factors help ensure the successful enactment of a simulation game. First, all players should be equally or evenly occupied with meaningful tasks. Second, players should strongly identify with their roles, acting them out with total involvement. Third, the roles should be interesting both to role players and to those with whom they interact. On these dimensions of evenness, involvement, and interest value, none of the simulations/games rate low. *Cope, Utopia, Edplan,* and *2000 A.D. Futura City* rate average in the areas of both evenness and involvement because they all have patterns notably strong and weak roles, with some roles having h degrees of involvement, while others had very limited deg of involvement. On the other hand, a game director can e modify roles in all four to add details or distribute task ensure more effective participation by all players. When characteristics and role flexibility are jointly considered, t are four simulations that generally involve players evenly interesting roles and in roles which can be easily modif added, or deleted. These are *Futuribles, Space Patrol, Fu Planning Games,* and *Edventure II.* Table 13 rates role cha teristics and role flexibility for all simulations/games

TABLE 12 Role Descriptions

Brief: Several Sentences	Detailed: 1-2 Paragraphs	Lengthy: 1 Page or More
Dynamic Modeling of Alternative Futures	*Futuribles*	*Space Patrol*
Hybrid Delphi	*Simulating the Values of the Future*	*Cope*
2000 A.D. Futura City	*Future Planning Games*	*Utopia*
	Edventure II	*Prospects*
		Edplan

INTERACTIONS

In consideration of students' opportunities to learn s interaction skills or to practice leadership roles, as well a game directors' preferences for interactions of various type intensity, we have reviewed the nature of the interaction these simulations/games. Table 14 displays the range. *Pr pects,* a self-administered exercise, involves very limited i action when there is any at all, while, at the other end of scale, *Simulating the Values of the Future, Edplan,* and *A.D. Futura City* involve intense interactions in the form alternative roles, frequent attempts to persuade, and sev different types of interaction, including within and betw small groups, as well as within and between large groups.

RULES

The rules for most of the simulations are generally goo outstanding in their clarity, organization, and completenes Table 15 reflects, though three are related as only adequate these counts. *Simulating the Values of the Future, Sp Patrol,* and *2000 A.D. Futura City* are fairly complex sim tions, but their rules lack the precision and organization make them easy to follow. This does not render them unp

TABLE 13 Role Characteristics and Flexibility

Role Characteristics	*Futuribles*	*Dynamic Modeling of Alternative Futures*	*Simulating Values of the Future*	*Space Patrol*	*Hybrid Delphi Game*	*Future Planning Games*	*Cope*	*Utopia*	*Prospects*	*Edplan*	*Edventure II*	*2 A Fu C*
Evenness: Degree to which all players are equally occupied	High	High	Avg.	Avg.	High	High	Avg.	Avg	N/A	Avg.	High	
Involvement. Degree to which players become involved with roles	High	High	High	High	High	High	Avg.	Avg.	High	Avg.	High	
Interest value of roles	High	Avg.	High	High	High	High	High	High	High	Avg.	High	
Role Flexibility												
Ease with which new roles can be *added*	Easy	Avg.	Avg.	Easy	Diff.	Easy	Easy	Easy	Diff.	Easy	Easy	
Ease with which existing roles can be *deleted*	Easy	Diff.	Avg.	Easy	Diff.	Diff.	Easy	Easy	Diff.	Easy	Easy	
Ease with which existing roles can be *modified*	Avg	Easy	Easy	Easy	Easy	Easy	Easy	Easy	Diff.	Easy	Diff	

TABLE 14 Interactions

Types of Interactions	*Futuribles*	*Dynamic Modeling of Alternative Futures*	*Simulating Values of the Future*	*Space Patrol*	*Hybrid Delphi Game*	*Future Planning Games*	*Cope*	*Utopia*	*Prospects*	*Edplan*	*Edventure II*	*2000 A.D Futura City*
Individual-individual	X	X	X	X	X	X	X	X	X	X	X	X
Within small groups (3-7)	X	X	X	X	X	X	X	X		X		X
Between small groups		X	X		X	X	X	X		X		X
Within large groups (7+)		X	X		X	X	X	X		X		X
Between large groups			X							X		X
Intensity of Interaction												
Frequent interaction	X	X	X	X	X	X	X	X		X	X	X
Frequent trading				*								
Frequent persuasive attempts/ compromising/ bargaining	X	X	X		X	X		X		X		X
Several alternative roles	X	X	X	X		X	X	X		X	X	X
Same individual in several different roles	X	*	*	X		*	*	*		X		*
Frequent research-based oral presentations before small/large groups		*					X	X				X

Key. X = Characteristic present
* = Possible variation

able, but it does lengthen the preparation time before play can begin.

PLAYER/ROLE RESOURCES SCORING

The procedures for scoring are generally clear and adequate, as the summary in Table 16 shows. This table also notes the general background that might enhance the effectiveness of players. When you consider using one of these simulations/games, give careful attention to the backgrounds of the potential participants. By reviewing the information in Table 16 on the types of player resources most relevant to success, a game director can try to compensate before play begins for any significant variations in player's knowledge, experience, or ability that may compromise the interest, enjoyment, and educational value of the simulation. You might either take special care in assigning individuals to roles or you might modify the complexity of role tasks and the nature of goals to prevent unfair advantages or disadvantages from previous experience from entering into play as disruptive factors

SIMULATION/GAME PACKAGING

If any of the future-oriented simulations/games appear useful and appropriate for your purposes on the basis of previous

TABLE 15 Rules

Simulation/Game	Number of Pages Devoted to Rules	Clarity, Organization, and Completeness		
		Adequate	Good	Outstanding
Futuribles	14 (½-page size)			X
Dynamic Modeling of Alternative Futures	Averages about 6 pages each simulation		X	
Simulating the Values of the Future	11	X		
Space Patrol	25	X		
Hybrid Delphi Game	4		X	
Future Planning Games	2		X	
Cope	21		X	
Utopia	7		X	
Prospects	34			X
Edplan	10		X	
Edventure II	8		X	
2000 A.D. Futura City	2	X		

TABLE 16 Player Resources and Scoring

Simulation	Most Relevant Player Resources	Scoring
Futuribles	Experience knowledge of predicted future trends	No explicit criteria. Result is values/priorities/predictions clarification. Readily usable in decision making
Dynamic Modeling of Alternative Futures	Knowledge and experience; mastery of content/process during play	Participants receive points for predictive accuracy, decision-making, skill in movement on game board, or skill in mastering content of simulation, with rewards contingent upon performance.
Simulating the Values of the Future	Power of some roles determined by differential weighting; knowledge of predicted technology, computational accuracy	Computation and comparison of initial with final probabilities, likelihood and consequences. Individual compares group results with his/her intent, reviews overall consequences.
Space Patrol	Imagination and fantasy; skills in bargaining strategy	Detailed computations and weights tables available to facilitate scenario generation; success probability tables, shield rating tables; ranged weapons table detailing accuracy and power; tables for detailing effects of landing zones, types of encounters, and attributes of aliens or objects encountered.
Hybrid Delphi Game	Knowledge and experience; knowledge of predicted future trends	Comparison of initial individual selections with final group selections; degree of success at persuasion within groups of 3.
Future Planning Games	No particular prior skills; power of some roles determined by differential weighting	Comparison of initial individual selections and decisions with final group selections; degree of success at persuasion/consensus building; degree of success of one's team in debates
Cope	Library study; persuasive presentation of ideas	Points awarded for quality of ideas in describing future in human or technological terms; degree of success in job training and task performance; degree of success in information gathering, assimilation, organization, and utilization; degree of success in coping with accelerating change; degree of success in mastering simple computer language.
Utopia	Library study; persuasive presentation of ideas	Degree of success in achieving consensus on moral, economic, technological, and political systems, degree of success in library research, degree of unanimity in class on utopian commitment; degree to which systems are defensible in the face of crucial evaluation questions/criteria.
Prospects	Knowledge of one's professional career goals and present strengths/weaknesses	Degree to which the action plan for career development is implemented during two months following the simulation
Edplan	Skill in the political process and persuasive presentation of ideas/positions	Degree to which one retains powerful position, or has candidates who win, during successive rounds of voting. Computation of relative degree of power takes into account degree of power allocated to individual's role.
Edventure II	Experience selecting elected courses to achieve career goals	Learner determines success during the 20 year simulated educational venture by computing satisfaction points, surplus income, and savgins, and comparing those figures to other players. To avoid losing, must accumulate $20,000 by game's end.
2000 A.D. Futura City	Knowledge and experience with urban planning procedures; study and presentation of positions	The winning group will have outlined priorities and objectives for Futura City closest to those adopted by the Assembly in the final urban plan.

evaluation criteria, you will hope that the package will be economical, durable, reusable, and ready for you to use. Those simulations that come ready-to-use are *Futuribles, Future Planning Games, Prospects, Edplan, Edventure II,* and *2000 A.D. Futura City*. The last three are kits, the most expensive in this selection. *Cope* and *Utopia* require some simple duplication. The remaining simulations/games come in book or booklet form and require construction and duplication. Although this process involves time and some additional expense for duplication, these costs are not excessive, and these simulations remain on balance very cost effective. They have relatively reasonable purchase prices, especially considering that one is getting both a book and one or more simulations/games for the price of a book alone. Table 17 summarizes this information.

TABLE 17 Cost and Packaging

Simulation and Publisher	Kind of Packaging	Cost per Kit or Book	Completeness	Durability
Futuribles (World Future Society)	kit	$9.45	complete	excellent
Dynamic Modeling of Alternative Futures (School of Education, Indiana Univ.)	book	$2.00	construction and duplication	average
Simulating the Values of the Future (The Free Press)	book	$4.95	construction and duplication	average
Space Patrol (Gamescience)	book	$5.00	construction	average
Hybrid Delphi Game (R. Saroff)	booklet	$5.50	duplication	average
Future Planning Games (Greenhaven Press)	large fold outs	$.95 each	complete	average
Cope (Interact)	kit	$14.00	complete	average
Utopia (Interact)	kit	$10.00	complete	average
Prospects (Transnational Programs)	book	$6.50	complete	average
Edplan (Games Central)	kit	$30.00	complete	average
Edventure II (Games Central)	kit	$60.00	complete	average
2000 A.D. Futura City (Newsweek)	kit	$47.00	complete	good

DEBRIEFING

The degree to which students may achieve important simulation/game objectives may depend upon the opportunity they have to reflect and generalize from their experiences through a structured debriefing. The availability of printed guides for conducting the debriefing, evaluation forms or procedures, and guidelines for additional activities can be a great help to game directors in conducting an effective debriefing. Unfortunately, procedures for debriefing are lacking entirely for *Futuribles, Simulating the Values of the Future, Space Patrol,* and the *Hybrid Delphi Game*, they are very limited in *Edplan.* Evaluation forms or procedures are specified for only six of the twelve simulations/games.

Though *Futuribles, Space Patrol,* and the *Hybrid Delphi Game* are among the simulations most deficient in debriefing and evaluation procedures, all three offer some excellent guidelines for additional activities. The sections on "planner games" and "student uses" in *Futuribles* substantially contribute to achieving educational objectives. *Space Patrol*'s scenario generator gives the user outstanding freedom and flexibility in generating ideas for replays, and, since the game was designed to entertain, absence of debriefing procedures is not a very significant omission. The *Hybrid Delphi Game* suggests helpful modifications and extensions to play.

These simulation/gaming designers as a whole seem somewhat reluctant to look upon the past, even when that past is players' behavior during a future-oriented simulation/game. Thus, you should plan to give some additional preparation time to structure players' reflection upon their experience in your effort to help them achieve the intended purposes of these simulations.

SUMMARY

Evaluation

On the basis of the ratings previously presented, Table 19 presents a summary of the evaluations for 14 areas, with each listed dimension weighted equally to give the overall rating. A review of this chart will disclose that almost half of the future-oriented simulations/games have received an overall excellent rating: *Futuribles, Dynamic Modeling of Alternative Futures, Simulating the Values of the Future, Future Planning Games, Cope,* and *Utopia.* The four rated "good" overall were: *Hybrid Delphi Game, Prospects, Edplan,* and *2000 A.D. Futura City.* Two were rated average: *Space Patrol* and *Edventure II.*

In interpreting these ratings, you, as the potential user, should *always* begin with a clear idea of your own purposes. For example, although *Edventure II* was rated lower than others, it does an excellent job of achieving its stated objectives, and the packaging was rated excellent. By comparison, although rated among the top group overall, *Simulating the Values of the Future* has two important limitations—it is a complex simulation, and the user has to spend time assembling the materials before it can be played. This is to suggest that, before hastily selecting one simulation over another, you

TABLE 18 Debriefing

	Printed Guide for Directed Discussion	Evaluation Forms or Procedures	Guidelines for Additional Activities	Comments
Futuribles	no	no	yes	Although procedures are not specified for debriefing, by encouraging discussion of values during each round of play you can achieve objectives normally sought by a formal debriefing. Procedures offered for "planner games" and "student uses"
Dynamic Modeling of Alternative Futures	yes	yes	yes	Dependent variable measurement has been the most common form of debriefing employed in these simulations/games. Many have used a variety of measurement procedures for research and evaluation
Simulating the Values of the Future	no	yes	yes	The evaluation proceeds in 3 phases: 1) evaluation of outcomes conducted from the perspectives of six groups (teenagers, housewives, middle-class employed persons over 65, cultural elite, and the poor); 2) evaluation of outcomes; and 3) critique of exercise.
Space Patrol	no	no	yes, scenario generator	The purpose is to entertain debriefing is not required
Hybrid Delphi Game	no	no	yes	Although no debriefing procedures are specified, guiding the discussion during consensus-building may help achieve important objectives.
Future Planning Games	yes	yes	yes	Excellent discussion guides and evaluation forms are built into the participant's game materials, which require decisions or disclosure of attitudes/values.
Cope	yes	no	yes	A one-page printed set of debriefing questions is good; a bibliography of films, articles, and books helps the teacher enhance the simulation's educational impact
Utopia	yes	yes	yes	Students receive a set of evaluation questions concerning the moral, economic, technological, and political systems they have established, teacher has selected bibliography for additional activities.
Prospects	yes	yes	yes	The exercise has debriefing/evaluation procedures built in at every step.
Edplan	yes, but very limited	no	no	Debriefing procedure is very inadequate, since it is a process having players read their role profiles aloud, with the group voting on whether the players achieved their objectives.
Edventure II	yes	no	no	A two-paragraph general guide is provided, offering one "opener" question; procedures generally inadequate
2000 A.D. Futura City	yes	no	yes	Eleven debriefing questions stated; evaluation procedures for determining final scores are clear, excellent guides for additional activities.

would be advised to be very clear about your own intent, determine the importance to be placed upon the criteria and in what areas for making evaluative judgments, and then *review at least three* alternatives before arriving at a decision.

Comments

Our discussion of the simulations/games we have reviewed concludes with some informal comments centering on suitable conditions for using them, some possible limitations, and personal experiences with them, with the intent of helping you decide what you might like to try with your group or students.

TABLE 19 Evaluation Summary

	Futuribles	*Dynamic Modeling of Alternative Futures*	*Simulating Values of the Future*	*Space Patrol*	*Hybrid Delphi Game*	*Future Planning Games*	*Cope*	*Utopia*	*Prospects*	*Edplan*	*Edventure II*	*2000 A.D. Futura City*
Educational uses	H	H	M	M	H	H	M	H	H	L	M	M
Practical considerations: age level, group size, playing time, flexibility, in outcomes/issues	H	H	M	M	M	H	M	M	M	L	M	L
Complexity*	H	L	L	L	H	H	M	M	M	H	H	H
Values promoted	H	M	M	L	M	H	M	H	L	L	L	M
Issues	M	H	M	L	M	H	M	H	L	M	L	H
Accomplishment of stated objectives	H	H	H	M	M	H	M	H	H	M	H	M
Knowledge and skills												
Research	M	H	M	M	L	H	H	H	M	L	L	M
Computation		L	L	L			L				L	
Predicting probabilities	H	H	H	L	L	M	H	M	M	L	L	L
Generating alternative possibilities	H	H	M	M	L	L	H	H	M	M	M	M
Clarifying preferabilities	H	H	H	M	M	H	H	H	M	M	L	M
Modes of interaction	M	M	H	L	H	H	M	H	L	H	L	H
Interpersonal interaction	L	H	M	L	H	H	M	H	L	H	L	M
Evaluation	M	H	M	L	M	H	H	M	M	L	L	M
Role descriptions	M	L	M	H	L	M	H	H	H	H	M	L
Role characteristics	H	M	M	M	H	H	M	M	L	L	H	M
Types of interaction	L	M	H	L	M	M	M	M	L	H	L	H
Intensity of interaction	M	H	M	M	L	M	M	H	L	M	L	H
Rules clarity, organization, and completeness	H	M	L	L	M	M	M	M	H	M	M	L
Packaging	H	L	L	L	M	H	H	H	H	H	H	M
Debriefing	L	H	M	L	L	H	M	H	H	L	L	M
	Ex	Ex	Ex	Avg	Good	Ex	Ex	Ex	Good	Good	Avg	Good

Key: H = High
M = Medium
L = Low

*A high rating was assigned if the simulation/game was rated as simple

Futuribles

This card game offers the user an excellent technique for getting participants to explore future possibilities in nonthreatening ways, revealing a great deal about their present values, attitudes, knowledge, and goals. It is an excellent basic futures introduction, as well as an enjoyable parlor game. For example, after not having seen an old friend for two years, an hour with *Futuribles* easily updated me on his personal past, present, and future at a breadth, intensity, depth, and detail that would have taken a day or two to emerge normally.

Dynamic Modeling of Alternative Futures

This 100-page publication presents detailed instructions for assembling five simulations/games, all of which the authors have empirically tested in a variety of teacher training settings. The simulations/games are generally well designed for playability and efficiency in achieving objectives that frequently concern the preparation or inservice training of teachers working with, or designing curriculum for, exceptional children. Although these simulations/games were primarily designed within the area of special education, at least four have had wider application with a variety of target audiences. All are especially effective in educating teachers on the subjects of the social psychology of mainstreaming handicapped children, using paraprofessionals, building staff consensus, training teachers in operant conditioning concepts, and identifying/assessing gifted/talented children and youth.

Simulating the Values of the Future

This simulation is a classic in the field, written by Olaf Helmer (a codesigner with Norman Dalkey of the delphi method for conducting futures research). This version is a written

description of the simulation's methods and materials as it was conducted in Pittsburgh for five hours with 30 people in September 1966 as part of a conference on the effects of technological change. It appears in an excellent futures book which has a number of other outstanding articles by well-known futurists on the impact of technological change on past, present, and future American values. I first used it in abbreviated form in a graduate course I taught on Futures Simulation/Gaming. Although it involved somewhat laborious computation, it provided an excellent overview of issues, and the group remained highly motivated and task-oriented throughout, despite protests over calculations. I have heard the simulation praised by the Denison Simulation Center staff (Denison University, Granville, Ohio), who used it in undergraduate liberal arts courses; I have also observed its highly successful application as a university faculty/staff development exercise in that same setting.

Space Patrol

The serious war gamer, science fiction enthusiast or author, or simulation/gaming designer will find the *Space Patrol* manual a rich source of ideas for game scenarios and science fiction plots. Although sometimes difficult to follow and time-consuming to read, the manual contains a variety of attributes of beings, situations, and scenarios, that, when selected and/or varied (often through the use of multifaceted die or dice), provide the setting for many hours of science fiction and war game-based enjoyment. It is my firm conviction that movie, television, or paperback writers could readily use the manual as a device for modeling plots to stimulate and help organize their creative writing.

Hybrid Delphi Game

My introduction to this highly playable game was at a training session of the World Future Society dealing with futures simulations/games. Our participation was enthusiastic, debate was heated and intense, and consensus was achieved with a sense of satisfaction. We obtained an excellent practical experience in delphi methodology. The exercise is readily adaptable to different events the user may want to have the group consider.

Future Planning Games

Bender and McCuen, now directors at Greenhaven Press, were two high school social studies teachers who began designing games on controversial social issues to bring out assumptions and facts underlying opposing viewpoints. Their instructional development activities grew into a full-time profession as Greenhaven Press, publishing the Opposing Viewpoints Series of paperbacks on controversial issues, and the Future Planning Games. Their classroom experience, I'm sure, contributed substantially to the extremely useful, well-designed, and cost-effective format, with content focusing on important present and future social issues for junior and senior high school students.

Cope

One of the strategies most frequently recommended by simulation/gaming researchers and practitioners is to imbed a simulation/game in the context of a variety of traditional educational activities. The "learning through involvement" approach of *Cope* provides not simply for imbedding, but for using *Cope* as a four-week simulation/game, integrating a selected bibliography, time chart, detailed teacher role instructions, and handouts for students into an attempt to provide students with the experience of the simulated stresses and anxieties of trying to cope with rapid social change.

Utopia

One of the most difficult things to accomplish in exploring futures in educational settings is to get students to creatively and imaginatively think of their personal futures in terms of the future. It is often difficult for students to suspend the momentum of present and past experiences, which often eclipses their serious exploration of alternative future possibilities. This simulation of constructing an ideal society is similar in one or two respects to B. F. Skinner's Walden Two: simulation participants are subjects in a professor's experiment, and there is group participation in voting on principles that will form the basis for the new society. In objecting to a rule proposed by another player, one participant was overheard to remark, "I don't want to be a rat in your kind of Skinner Box!" But the simulation *Utopia* differs from *Walden Two* in many respects: participants are led to engage in a great deal of library research in exploring eight subcategories of occupations and 31 job possibilities. Thus, it is most likely that no single psychological theory will underlie the utopian society the students created. Another important difference is that *Utopia* is begun in a fertile valley donated by a wealthy industrialist, and participants have no economic worries, having each been given one million dollars. Walden Two has to make it on its own economically from the outset. This removal of economic reality in *Utopia* is at some times a strength, and at other times a weakness. While it may help students consider more far-fetched possibilities as alternative principles, it also removes a considerable amount of accountability and reality: The kind of principles selected as the basis for an ideal society are not likely to be the same between someone worried about providing the next meal for his or her family and a gentleman farmer who has considerable inherited wealth. The user of this simulation might want to consider an alternative scenario or introduce some pressing realities to "test" the adequacy of the principles drafted by the class, once they have survived the political selection process within *Utopia*.

Prospects

As a self-focused and self-administered career development tool, *Prospects* provides simulation users with opportunities to improve the personal planning of their professional career development at far less than the cost of a management consulting/career counseling firm. The printed materials readily provide a walk through the major decision and analysis steps. I

believe that the simulation compares favorably to the first free "promotional" career counseling sessions provided to me by a management consulting firm when I was a Captain in the United States Air Force considering alternative professional careers. This firm offered me the opportunity to invest in myself by giving them $2000 or more to do an exhaustive psychometrically based evaluation, followed by professional career counseling, presumably leading to a rising career as an executive. (I respectfully declined to pursue a Ph.D.) I believe that the principles underlying the *Prospects* approach are very similar to those being offered in far more expensive career counseling packages, all of which are designed to invoke positive, self-fulfilling prophecies for the career advancement of the aspiring professional.

Edplan

The political dimensions of planning a school budget are dynamically simulated in this very actively involving role-playing simulation. The basic content is a worthwhile and, in some areas, even crucial topic with the current dilemmas of public school systems in adequately financing their educational programs. *Edplan* presents an excellent representation of political realities and pressures, and offers feedback to participants through votes on their positions, elections, and simulated review of proposals by a federal funding agency. One limitation inherent in the simulation's approach is its stress on the political factors in the process, at the expense of rational factors. One participant expressed some resentment during debriefing that "politics seems to be the only thing that's important in this game." Although the public forum of debate presents a lively simulated setting for consideration of issues, the underlying model is not always representative of all the factors that go into educational planning, and that is an inherent design limitation. If the underlying model of the simulation is acceptable to the user, the simulation will do a good job of creating that type of educational planning atmosphere.

Edventure II

A clear, easy-to-follow set of role descriptions and game administrator procedures are presented for simulating 20 years of future educational life. This simulation—built around a college course catalog and a registration/transcript record form, with planning for future education, work, and leisure, and with feedback on decisions—can involve middle or high school students in more seriously considering their long-term futures.

2000 A.D. Futura City

The self-contained multimedia kit reflects the highly polished professional "packaging" one might expect from the publisher of *Newsweek*. As a part of the kit on 2000 A.D., the Futura City simulation is relatively very short. The materials of the entire kit provide the structural components for a variety of future-oriented activities.

CONCLUSION

Whether we are designers or participants in simulations, our assumptions may easily forestall decisions or may sometimes launch untimely and misdirected actions. This may occur because we "know" our plans, our visions of tomorrow, are firmly rooted within the present and past, appearing—erroneously—right or wrong for the tasks at hand. With sophomoric arrogance we may become like the sorcerer's apprentice who tinkered with trends during his master's absence, flooding the laboratory.

But dynamic modeling of the future through simulation does offer the chance to transcend the constraints of real-world time and space; the social sciences do, in a sense, briefly become sorcery and harness the power of knowing the probable practical impacts of simulated alternative future events. With the enactment of a simulation, people participating within created scenario environments are led to make believe for real. The events of the simulation are real to them. At the same time, the simulation may stand for events having either hypothetical future existence or actual past realization. In either case, the underlying elements are often diffused and separated across distances of space and depths of time not easily traversed by human perception. We have at once both the symbol (simulation) and the thing it represents (hypothetical, or perhaps real, future events).

We must not confuse our gaming, modeling, and simulation with reality. Perhaps we may find these created realities much better than the booming, buzzing confusion of real and chaotic events, and we may prefer them. As soothsayers, perhaps we will be no better off as future story tellers—or "futstorians"—than the group of historians whose writings have been regarded by some as "a pack of lies told by a group of people who weren't even there." Nonetheless, it appears desirable to keep designing alternative futures simulations, because we need better operating manuals to run the social systems of Spaceship Earth. The fact that visions of tomorrow created by future-oriented simulations eventually will be found not to correspond with actual events does not eliminate the value of this activity. Future-oriented simulations/games may help us plan better for the future by encouraging us to experience parts of the future's structure before the real events occur.

Soren Kierkegaard observed, in *Purity of Heart is to Will One Thing*, that "the aim is a more reliable indication of the marksman's goal than the spot the shot strikes." Were we to hit the target's center every time, there would be no sport in taking aim.