

## Information Management and CASE-IMS

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When a principal and the school management/design team have laid the groundwork for the three basic elements of the school design process, formal data collection is the next priority. Information management involves information gathering and information use, two distinct phases of the process. Sproull and Zubrow (1981) found in a study of five successful managers of educational innovations that managers typically do little formal data gathering. Their days are filled with countless short verbal contacts with staff members, students, and parents. They collect most of their information verbally, in abbreviated form, and with little repetition. Sproull indicated that principals learn about school problems largely by asking students or staff members they encounter how things are going. Their data gathering is largely informal and verbal.

In 1987, Sokoloff reported on a project to develop comprehensive evaluation systems in school districts. He found that principals and other school staff members had trouble making sense of the entire process—specifying what variables to evaluate, analyzing the data generated, and determining how the data might suggest interventions useful for school improvement. Most school leaders are uncomfortable using and interpreting data, nor are most trained in data analysis and manipulation.

McColsky, Altschuld, and Lawton (1984) discovered that principals who viewed themselves as instructional leaders made good use of both formal and informal sources of information, including program evaluation and student test data, and personal conversations. McColsky and colleagues could not determine whether the principals' self-concept motivated their information management practices or vice versa, but the basic implication was clear. School leaders aspiring to real instructional leadership need to be more data-driven, grounded in the reality of their organizations, and knowledgeable about the needs of their clients.

Successful information management requires a careful analysis of the status of the school, a working knowledge of the tools of research and problem solving, and adequate technical support. Collecting good data is the first step in this process. Principals and school management/design teams must coordinate the process of data gathering. School leaders should ask and develop written responses to the following questions, which will facilitate this activity:

1. What does our school vision imply for school improvement and restructuring?
2. Does our vision involve comprehensive change or only limited improvements?
3. What do we need to know to make good decisions for implementing our vision:
  - About student, teacher, and parent perceptions of school culture/climate?
  - About characteristics of the school curriculum and related instructional strategies?
  - About the organizational and functional dimensions of the school?

- About student outcomes data?

Many of the responses to these questions will (and must) be local—focused on the needs, strengths, and weaknesses of a given school. Asking good questions is always the foundation of good research, development, and change. The answers to these questions will suggest the kinds of data that should be collected. If a school finds its vision is clear, its focus on improvement is justifiably limited, and only certain structures, programs, or student groups will be affected, data collection can be more limited and focused. If, on the other hand, the school vision indicates that comprehensive change is called for and the culture and/or organization of the school may be dysfunctional, comprehensive data collection is needed. This is the point at which NASSP's Interactive Model of the School Environment and the related Comprehensive Assessment of School Environments Information Management System (CASE-IMS) can be most helpful.

### **CASE-IMS**

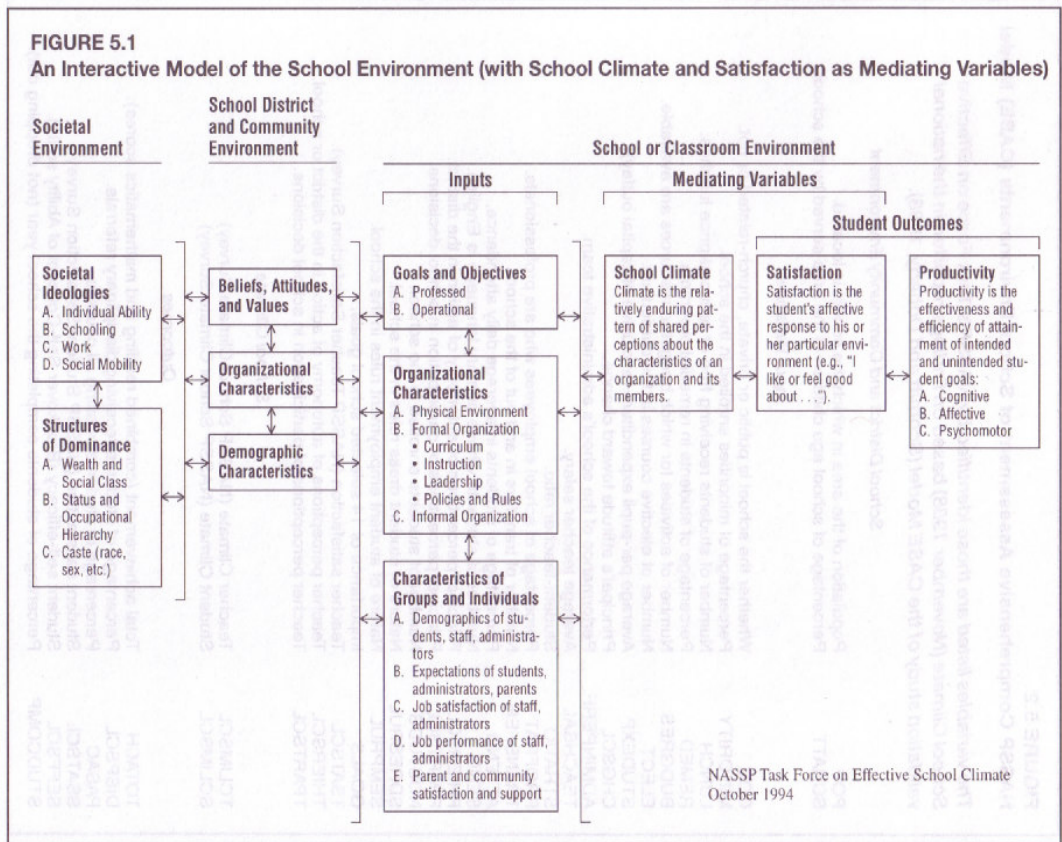
NASSP's CASE-IMS is a data collection and interpretation tool based on an Interactive Model of the School Environment (see Figure 5.1). The CASE-IMS can provide schools with a comprehensive, interrelated picture of the school environment. The CASE-IMS is an assessment and planning package in a computer environment that profiles 34 district and school variables, including climate, satisfaction, and six student outcomes (see Figure 5.2).

Data are gathered by seven instruments:

- Principal Questionnaire
- School Climate Survey (Students, Teachers, Parents)
- Student Satisfaction Survey
- Teacher Satisfaction Survey
- Parent Satisfaction Survey
- Student Report Form (Self-Efficacy)
- Teacher Report Form (Empowerment)

The first CASE instruments to be released were School Climate and Satisfaction Surveys for students, teachers, and parents/community members. Independent climate and satisfaction surveys make possible careful analysis, across groups, of what people generally believe about the school (climate) versus individuals' perceptions about their own relationships with the school (satisfaction).

The CASE-IMS also includes measures of teacher and student efficacy (available separately for use by schools focusing on these important issues). The Teacher Report Form contains measures of teacher views on 14 important goals of education (to assess teachers' educational philosophies), degree of autonomy in the school, and participation in school decision making. The Student Report Form asks students about their capability to do challenging work in school, to complete college, to become a doctor, lawyer, or professor, etc.



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**FIGURE 5.2**

**NASSP Comprehensive Assessment of School Environments (CASE) Model**

*The variables listed are those identified by NASSP'S Task Force on Effective School Climate (November 1988) based on findings reported in the national validation study of the CASE Model (Schmitt and Doherty, 1988).*

<i>School District and Community Environment</i>	
POP	Population of the area in which the school is located.
SCHATT	Percentage of school age children in the area served by the school.
<i>Input Variables</i>	
GOV	Whether the school is public or private, church-related or not.
MINORITY	Percentage of minorities enrolled in the school.
LUNCH	Number of students receiving free or reduced-price lunches.
REMED	Percentage of students in remedial programs.
BUDGRES	Number of activities for which budgeted resources are available.
ELECT	Number of elective courses in the curriculum.
STUDEXP	Average per-pupil expenditure (exclusive of capital outlay).
CHGSCL	Principal's attitude toward change.
ADMINPERF	Performance of the school's administrative team.
TEACHSAL	Average teacher salary.
STRATIO	Student-teacher ratio.
PROFRAT	Percentage of school employees who are professionals.
TRANSFER	Number of transfers in and out of the school.
ATTEND	Percentage of students in average daily attendance.
SENG	Number of students whose primary language is English.
PHIERSCL	Principal perceptions of autonomy of action in the district.
PPARTSCL	Principal perceptions of participation in school decisions.
NOSTUDS	Number of students enrolled in the school.
SDRESRUL	Nature of student dress rules in the school.
SEMPRUL	Nature of student employment rules in the school.
GOALS	Importance of 14 selected school goals.
TSATSCL	Teacher satisfaction (NASSP Teacher Satisfaction Survey).
THIERSCL	Teacher perceptions of autonomy of action in the district or school.
TPARTSCL	Teacher perceptions of participation in school decisions.
<i>School Climate</i>	
TCLIMSCL	Teacher Climate (NASSP School Climate Survey)
SCLIMSCL	Student Climate (NASSP School Climate Survey)
<i>Outcomes</i>	
TOTACH	Total achievement (combined reading and mathematics scores).
DISPSCL	Percentage of students receiving disciplinary referrals.
PASAC	Percentage of students passing all courses.
SSATSCL	Student satisfaction (NASSP Student Satisfaction Survey).

SEFFSCL	Student self-efficacy (Brookover Self-Concept of Ability scale).
STUDCOMP	Percentage of students completing school year (not dropping out).

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All surveys are carefully validated and normed. All forms can be administered separately or as a combined battery. Information on administration is contained in the Climate and Satisfaction Examiners' Manual and the CASE-IMS Users Manual. (Scoring programs are available from NASSP or machine scoring can be arranged at several regional centers.)\*

The CASE-IMS software can be used for planning and budgeting decisions, to prepare board presentations and school accreditation reports, and to generate longitudinal analyses for school improvement initiatives. The program was designed to assist school improvement in two important ways:

- To identify strengths and weaknesses in current school performance
- To help select interventions to serve school improvement or restructuring.

### **The School Profile**

The CASE-IMS model and software can support data management by generating profiles of the 34 CASE-IMS variables, the 56 climate and satisfaction subscales, a categorical (stanine) listing of 63 key variables compared to national norms, box displays (graphs) for all climate and satisfaction scales, and item category reports for all surveys & reports.

*CASE-IMS Profile.* This is the most basic report generated by the program (see Figure 5.3). All 34 CASE variables are profiled, from general inputs at the community/district level and 24 school-level inputs to climate scores and six student outcome measures.

Three scores are printed opposite each variable name:

- The school's score on that variable
- The national mean (raw score) for the variable
- The T-score for the school's score on the variable. (Version 2.0 will offer a choice of T-scores or percentiles.)

The national mean for T-scores is always 50 and the standard deviation 10. Scores between 40 and 60 lie in the average range. Scores below 30 and above 70 are extreme. The straightforward nature of T-scores allows users to see at a glance the strengths and weaknesses of the school.

Figure 5.3 illustrates a sample printout of the Demonstration High School data contained in the CASE-IMS tutorial that is a standard feature of the program. Notice that several school T-scores are below 30 or above 70. The "Principal Perception of Participation" score, for example, is 14.85, placing it in the bottom 0.1 percent of the population. To interpret this score, one must know the definition of the variable.

\* *NASSP catalogs the CASE survey forms. CASE scoring and analysis services are available only from the Western Michigan University Evaluation Center, Kalamazoo, MI 49008. Contact Dr. Paul Berge at 1-269-387-5895.*

Appendix C in the *CASE-IMS Users' Manual* defines Principal Perception of Participation as the average of the responses to items 61 through 64 on the Principal Questionnaire. Items 61-64 use a 4-point scale with a score of "4" at the "always" end of the scale. The items ask about frequency of the principal's participation in hiring and

promotion decisions. The extremely low score for the Demonstration High School on this variable suggests little or no participation.

(Some CASE-IMS scores are not this obvious because they use reverse scoring for the scale or because lower is better, such as for teacher-student ratio. In any event, some interpretation is required. The *CASE-IMS Users' Manual* explains these issues.)

**FIGURE 5.3**

SCHOOL: Demonstration High School

DATE: October 19, 2004

**CASE-IMS VARIABLES**

Variable Name	School Value	National Mean	School T-Score
Population Category	3.00	3.15	48.99
Households with School-Age Children	7.00	5.88	56.75
School Governance Structure	0.00	0.10	46.88
Percentage of Minorities Enrolled	5.00	12.50	45.78
Students with Free/Reduced-Price Lunches	20.00	13.36	54.90
Students Enrolled in Remedial Programs	1.00	0.83	51.57
Proportion of Activities with Budgets	0.44	0.66	41.85
Average Number of Electives per Area	5.33	4.53	53.40
Average Per-Pupil Expenditure	3175.00	3280.32	49.09
Difficulty of Introducing Change	3.00	3.06	48.18
School's Administrative Team Performance	3.73	3.73	50.00
Average Teacher Salary	28150.00	26832.94	52.29
Student/Teacher Ratio	10.00	16.11	34.80
Professional/Personnel Ratio	0.83	0.71	62.00
Student Transfers	41.00	172.77	43.78
Percent Average Daily Attendance	95.00	93.73	53.90
Percent Students with English Primary Language	95.00	98.54	40.66
Principal Perceptions of Autonomy	2.00	0.72	78.44
Principal Perceptions of Participation	1.00	3.39	14.85
Number of Students Enrolled	400.00	842.91	42.98
Nature of Student Dress Rules	0.00	2.07	33.17
Nature of Student Employment Rules	0.00	1.40	40.28
Importance of 14 Selected School Goals	11.80	5.18	99.04
Teacher Satisfaction	2.80	3.23	35.67
Teacher Perceptions of Autonomy	2.30	1.37	83.21

Teacher Perceptions of Participation	0.60	0.85	40.74
Teacher Climate	3.00	3.64	27.93
Student Climate	2.76	3.30	30.00
Total Achievement	50.00	50.00	50.00
Percent of Students Receiving Discipline	1.00	3.52	38.06
Percentage of Students Passing	98.00	91.40	59.22
Student Satisfaction	3.03	3.27	38.00
Student Self-Efficacy	1.89	2.16	35.00
Proportion of Students Completing Year	0.99	0.98	53.33

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The principal and school management/design team should carefully analyze all the school's CASE variable scores as the initial basis for school improvement planning and design. Figure 5.4 shows a supplementary printout that can be very helpful at this stage of analysis. The "Categorical Listing of School Variables as Compared to National Norms" prints out the 63 most important CASE variables and climate/satisfaction subscales on a nine-point (stanine) scale that shows their range from much above average to much below average in relation to the CASE-IMS national norms. The user must know the definitions of these variables and whether high or low scores on them are "good" or "bad." Armed with this knowledge, the user can readily determine which school scores represent strengths or weaknesses. The variables that exhibit serious weakness can be targeted for improvement efforts or radical change on the School Design Statement.

*Climate and Satisfaction Profile.* A second basic printout of the CASE-IMS program is a profile of climate and satisfaction subscale scores (Figure 5.5). This report provides the school score (the mean), the national mean, and the T-score corresponding to the school score for each of the climate and satisfaction subscales. Using this profile, it is possible to compare student, teacher, and/or parent scores on the same climate subscales or compare student, teacher, and parent climate scores with similar satisfaction subscale scores. Large differences between climate scores indicate that differing groups view the school very differently on that characteristic. This difference may reflect a serious problem or just a difference in perspective that further investigation will clarify. Major differences between subgroup climate and satisfaction scores always merit attention. Low satisfaction scores indicate a problem of morale. Low climate scores may suggest only a public relations problem or a deservedly low public image for the school in some aspect of its operation.

Differences in climate and satisfaction scores can best be seen by printing out box displays for students, teachers, and parents. These graphs (Figures 5.6 and 5.7) show the subscale scores on the Likert scale (1-5) that is used in all the instruments. All climate and satisfaction scales are regularly scored, so "5" is at the "good" end of the scale. The boxes in the graph represent the average performance band, the mid-range (68 percent) of scores in the national population. If there is an "X" in the box, the school's score is in the average range. If the "X" is above or below the box, the school is above or below average on the subscale.

The Teacher Climate Box Display example (Figure 5.6) shows that teachers rate the school average on Teacher-Student Relations, Student Academic Orientation, Guidance,

Student-Peer Relationships, and Parent and Community-School Relations. On the other hand, they rate the school below average on Student Behavioral Values and well below on Security and Maintenance, Administration, Instructional Management, and Student Activities.

The Student Satisfaction Box Display example in Figure 5.7 shows that students rate their own school situations in the average range for these subscales: Teachers, Fellow Students, Schoolwork, Student Activities, Decision-Making Opportunities, and Communication. They rate Student Discipline and School Buildings, Supplies, and Upkeep below average.

**FIGURE 5.4**

SCHOOL: Demonstration High School

DATE: October 19, 2004

**Categorical Listing of School Variables as Compared to National Norms**

**Much above average**

- INPUT — Importance of 14 Selected School Goals
- INPUT — Teacher Perceptions of Autonomy
- INPUT — Principal Perceptions of Autonomy
- CLIMATE — SCO5: Student Behavioral Values
- CLIMATE — SCO7: Student-Peer Relationships
- INPUT — Professional/Personnel Ratio

**Considerably above average**

- OUTCOME — Percent of Students Passing All Courses

**Above average**

- SATISFACTION — TSO2: Compensation
- INPUT — Students with Free/Reduced-Price Lunches

**Slightly above average**

- INPUT — Percent Average Daily Attendance
- SATISFACTION — SSO1: Teachers
- INPUT — Average Number of Electives per Area
- OUTCOME — Proportion of Students Completing Year
- SATISFACTION — TSO7: Parents and Community
- CLIMATE — TCO1: Teacher-Student Relations
- SATISFACTION — SSO4: Student Activities
- INPUT — Average Teacher Salary
- INPUT — Students Enrolled in Remedial Programs

**Average**

- OUTCOME — Total Achievement
- SATISFACTION — TSO3: Opportunities for Advancement
- SATISFACTION — SSO2: Fellow Students
- SATISFACTION — TSO5: Curriculum and Job Tasks
- INPUT — School's Administrative Team Performance

CLIMATE	— SCO1: Teacher-Student Relations
SATISFACTION	— SSO3: Schoolwork
INPUT	— Average Per-Pupil Expenditure
CLIMATE	— TCO7: Student-Peer Relationships
<b>FIGURE 5.4 (continued)</b>	
CLIMATE	— TCO8: Parent & Community-School Relationships
<b>Slightly below average</b>	
CLIMATE	— SCO4: Student Academic Orientation
INPUT	— Difficulty of Introducing Change
SATISFACTION	— SSO8: Communication
INPUT	— Percentage of Minorities Enrolled
CLIMATE	— TCO6: Guidance
<b>Below average</b>	
SATISFACTION	— TSO6: Co-Workers
SATISFACTION	— TSO4: Student Responsibility & Discipline
SATISFACTION	— SSO6: Decision-Making Opportunities
INPUT	— Student Transfers
INPUT	— Number of Students Enrolled
<b>Considerably below average</b>	
INPUT	— Proportion of Activities with Budgets
INPUT	— Teacher Perceptions of Participation
INPUT	— Percent Students with English Primary Language
INPUT	— Nature of Student Employment Rules
<b>Much below average</b>	
OUTCOME	— Percent of Students Receiving Discipline
CLIMATE	— TCO4: Student Academic Orientation
CLIMATE	— TCO5: Student Behavioral Values
OUTCOME	— Student Self-Efficacy
INPUT	— Student Teacher Ratio
SATISFACTION	— TSO8: School Buildings, Supplies & Maintenance
SATISFACTION	— SSO7: School Buildings, Supplies, Upkeep
INPUT	— Nature of Student Dress Rules
SATISFACTION	— SSO5: Student Discipline
CLIMATE	— SCO6: Guidance
CLIMATE	— SCO8: Parent & Community-School Relations
SATISFACTION	— TSO1: Administration
CLIMATE	— SC10: Student Activities
SATISFACTION	— TSO9: Communication
INPUT	— Principal Perception of Participation
CLIMATE	— TC10: Student Activities
CLIMATE	— TCO9: Instructional Management
CLIMATE	— TCO2: Security and Maintenance
CLIMATE	— SCO2: Security and Maintenance

CLIMATE — 5C03: Administration  
 CLIMATE — TCO3: Administration  
 CLIMATE — SCO9: Instructional Management

**FIGURE 5.5**

SCHOOL: Demonstration High School

DATE: October 19, 2004

**CLIMATE AND SATISFACTION VARIABLES**

<b>Variable Name</b>	School Value	National Mean	School T-Score
PCO1: Teacher-Student Relations	3.62	3.63	49.73
PCO2: Security & Maintenance	2.33	4.14	-17.04
PCO3: Administration	1.53	3.82	-34.82
PCO4: Student Academic Orientation	3.33	3.90	29.64
PCO5: Student Behavioral Values	2.77	2.87	47.30
PCO6: Guidance	3.78	3.83	47.83
PCO7: Student-Peer Relationships	3.70	3.78	46.80
PCO8: Parent & Community-School Relation	3.13	3.58	30.44
PCO9: Instructional Management	2.39	3.97	-29.00
PC10: Student Activities	2.98	3.90	17.14
PSO1: Parent Involvement	3.54	3.62	48.82
PSO2: Curriculum	3.81	3.91	48.36
PSO3: Student Activities	3.41	3.74	44.92
PSO4: Teachers	3.76	3.80	49.48
PSO5: Support Services	3.62	3.67	49.25
PSO6: School Buildings, Supplies & Maintenance	2.05	4.03	19.54
PSO7: Student Discipline	1.59	3.88	18.63
PSO8: School Administrators	1.57	3.96	18.55
PSO9: School Information Services	2.70	3.58	38.72
SCO1: Teacher-Student Relations	3.27	3.27	50.00
SCO2: Security & Maintenance	1.84	3.79	-17.24
SCO3: Administration	1.59	3.38	-21.60
SCO4: Student Academic Orientation	3.34	3.38	48.26
SCO5: Student Behavioral Values	2.88	2.53	67.50
SCO6: Guidance	3.41	3.78	31.50
SCO7: Student-Peer Relationships	3.75	3.43	66.00
SCO8: Parent & Community-School Relation	2.91	3.48	27.20
SCO9: Instructional Management	2.29	3.74	-35.29
<b>FIGURE 5.5 (continued)</b>			
SC10: Student Activities	2.89	3.68	23.67
SSO1: Teachers	3.67	3.43	53.43
SSO2: Fellow Students	3.52	3.44	51.05

SSO3: Schoolwork	3.12	3.13	49.86
SSO4: Student Activities	3.82	3.62	52.44
SSO5: Student Discipline	1.97	3.35	32.08
SSO6: Decision-Making Opportunities	2.56	3.00	45.11
SSO7: School Buildings, Supplies, Upkeep	2.40	3.65	33.33
SSO8: Communication	3.22	3.42	47.50
TCO1: Teacher-Student Relations	4.03	3.98	52.94
TCO2: Security & Maintenance	2.19	4.06	-14.48
TCO3: Administration	1.67	3.80	-28.89
TCO4: Student Academic Orientation	3.13	3.53	37.88
TCO5: Student Behavioral Values	2.57	3.00	35.67
TCO6: Guidance	3.95	4.03	45.56
TCO7: Student-Peer Relationships	3.68	3.70	49.00
TCO8: Parent & Community-School Relation	3.25	3.30	48.68
TCO9: Instructional Management	2.43	3.91	-14.35
TC1 0: Student Activities	2.58	4.05	8.00
TSO1: Administration I	1.54	3.60	26.05
TSO2: Compensation	3.56	2.94	56.60
TSO3: Opportunities for Advancement	2.83	2.73	51.08
TSO4: Student Responsibility & Discipline	2.86	3.26	45.46
TSO5: Curriculum & Job Tasks	3.69	3.67	50.30
TSO6: Co-Workers	3.80	4.09	45.47
TSO7: Parents & Community	3.40	3.15	53.13
TSO8: School Buildings, Supplies & Maintenance	2.47	3.63	34.74
TSO9: Communication	1.53	3.51	23.24

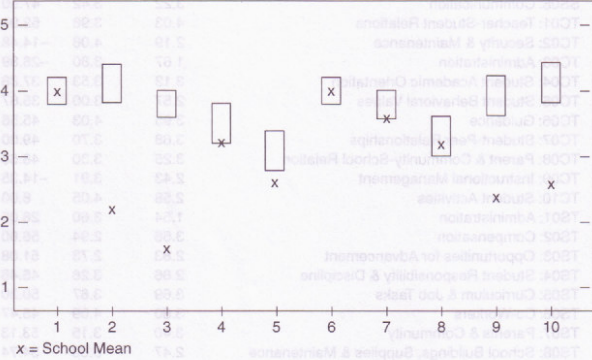
*Item Categories Report.* Figures 5.8 and 5.9 show examples of a CASE-IMS enhancement (version 1.2 and later) for the analysis of Item Categories on all surveys and report forms. These printouts allow the school leadership team to look closely at the individual items on the Climate and Satisfaction Surveys and the Student and Teacher Report Forms. Detailed analysis of items can help in isolating specific problems or devising a focused strategy for school improvement.

Suppose, for example, that the school's score on the Teacher-Student Relations School Climate subscale is below the national norm. This piece of information would certainly cause concern, but would not provide much basis for a specific planning strategy or action. Item Category analysis like that in Figure 5.8 can furnish detailed information about the pattern of teacher responses on each subscale item. The principal and the school management/design team might find, for example, that the item 5 rating ("Teachers treat each student as an individual") or item 7 rating ("Teachers are patient when a student has trouble learning") was particularly unfavorable and could design an intervention strategy accordingly.

**FIGURE 5.6**

SCHOOL: Demonstration High School  
 PRINCIPAL: John Doe  
 DATE: October 3, 1996

**Box Display for Teacher Climate**



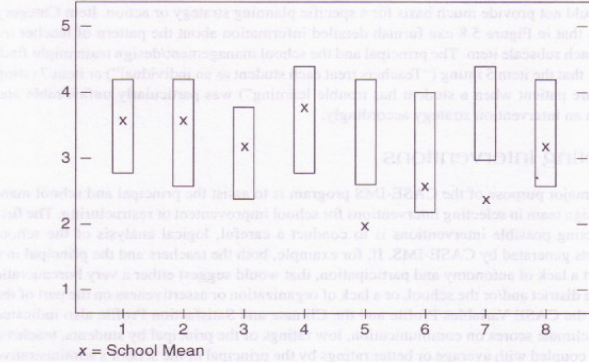
Variable Name	School Mean	Population Mean
1 - TC01: Teacher-Student Relations	4.03	3.98
2 - TC02: Security and Maintenance	2.19	4.06
3 - TC03: Administration	1.67	3.80
4 - TC04: Student Academic Orientation	3.13	3.53
5 - TC05: Student Behavioral Values	2.57	3.00
6 - TC06: Guidance	3.95	4.03
7 - TC07: Student-Peer Relationships	3.68	3.70
8 - TC08: Parent & Community-School Relations	3.25	3.30
9 - TC09: Instructional Management	2.43	3.91
10 - TC10: Student Activities	2.58	4.05

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**FIGURE 5.7**

SCHOOL: Demonstration High School  
 PRINCIPAL: John Doe  
 DATE: October 3, 1996

**Box Display for Student Satisfaction**



Variable Name	School Mean	Population Mean
1 - SS01: Teachers	3.67	3.43
2 - SS02: Fellow Students	3.52	3.44
3 - SS03: Schoolwork	3.12	3.13
4 - SS04: Student Activities	3.82	3.62
5 - SS05: Student Discipline	1.97	3.35
6 - SS06: Decision-Making Opportunities	2.56	3.00
7 - SS07: School Buildings, Supplies, Upkeep	2.40	3.65
8 - SS08: Communication	3.22	3.42

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## Targeting Interventions

The second major purpose of the CASE-IMS program is to assist the principal and school management/design team in selecting interventions for school improvement or restructuring. The first task in selecting possible interventions is to conduct a careful, logical analysis of the school profile reports generated by CASE-IMS. If, for example, both the teachers and the principal in a school report a lack of autonomy and participation, that would suggest either a very bureaucratic system in the district and/or the school, or a lack of organization or assertiveness on the part of the principal. If the CASE Variables Profile and the Climate and Satisfaction Profile also indicated low teacher climate scores on communication, low ratings of the principal by students, teachers, and parents, coupled with average or better ratings by the principal of the school's administrative team performance, and extreme disagreement about goals, then the school management team would know it should review and probably change its decision-making procedures.

The CASE-IMS can assist this kind of planning for school improvement or redesign in two ways:

1. An Interventions Target program can suggest various actions to improve school design and/or performance in particular areas of weakness or specially targeted areas of strength.

2. “What If “analysis can help the user manipulate demographic data or any of the modifiable variables in the program to predict their effect on student outcomes.

*Intervention Targets and Suggestions.* The CASE-IMS Intervention Targets program creates the Categorical Listing of School Variables that we discussed in the previous section. Using this listing, the principal or school management/design team can access more than 600 interventions stored in the program by the related input, climate, satisfaction, or outcome variables. The program displays the Categorical Listing and asks you to select one or more variables. When you do, a roster of potential interventions for each variable appears on the monitor and should be printed for easy use. Many of these interventions are not experimentally validated but are commonly employed practices that would fall in the category of “best practice.” They have been validated clinically or in the schools. The program reminds the user that the interventions are only suggestions and that the school must decide whether they meet local needs.

**FIGURE 5.8**

SCHOOL: Demonstration High School

DATE: October 19, 2004

EXCERPT

**ITEM CATEGORIES REPORT**

**TEACHER CLIMATE**

LEGEND:  
 1 = Strongly Disagree  
 2 = Disagree  
 3 = Neutral  
 4 = Agree  
 5 = Strongly Agree

Item	Categories					(6)	Mean
	1	2	3	4	5		
1. Teachers in this school like their students.	0	0	2	7	1	0	3.90
2. Teachers in this school are on the side of their students.	0	1	0	7	2	0	4.00
3. Teachers give students the grades they deserve.	0	0	1	6	3	0	4.20
4. Teachers help students to be friendly and kind to each other.	0	0	2	5	3	0	4.10
5. Teachers treat each student as an individual.	0	0	0	8	2	0	4.20
6. Teachers are willing to help students.	0	0	1	6	3	0	4.20
7. Teachers are patient when a student has trouble learning.	0	0	2	6	2	0	4.00

8. Teachers make extra efforts to help students.	0	0	2	5	3	0	4.10
9. Teachers understand and meet the needs of each student.	0	1	2	6	1	0	3.70
10. Teachers praise students more often than they scold them.	0	0	1	9	0	0	3.90

**FIGURE 5.9**

SCHOOL: Demonstration High School

DATE: October 19, 2004

**ITEM CATEGORIES REPORT  
STUDENT REPORT FORM**

LEGEND:

1 = A— Much above average

2 = B — Above average

3 = C — Average or unsure

4 = D — Below average

5 = E — Much below average

Item	Categories					Mean
	1	2	3	4	5	
1. Where do you think you would rank in your class in high school?	3	2	5	0	0	2.20
2. In order to become a doctor, lawyer, or university professor, work beyond four years of college is necessary. How likely do you think it is that you would complete such advanced work?	3	4	2	1	0	2.10
3. Do you think you have ability to complete college?	5	3	2	0	0	1.70
4. How do you rate yourself in school ability compared with those in your class at school?	5	4	1	0	0	1.60
5. Forget for a moment how others grade your work. In your own opinion how good do you think your work is?	4	5	1	0	0	1.70
6. What kind of grades do you think you are capable of getting?	5	4	1	0	0	1.60
7. Where do you think you would rank in your class in college?	1	6	3	0	0	2.20
8. How do you rate yourself in school ability compared with your close friends?	4	4	1	0	1	2.00

Figure 5.10 shows 7 of the 17 interventions available to improve the school climate variable of Student Behavioral Values. (The program contains varying numbers of suggestions for different variables, ranging from as few as 3 for the input variable, Professional/Personnel Ratio, to as many as 57 for another input variable, School's Administrative Team Performance.) Interventions recommended for enhancing Student Behavioral Values cut a broad spectrum from improving curricular relevance, classroom management, and attendance to specific suggestions for strengthening the school's orientation of new students, for recognizing cultural and ethical diversity, and for implementing cooperative team learning.

Intervention 5.01, for example, (Improving Curricular Relevance) urges the school to form a task force each year to assess the relevance of one curricular area and to replace curriculum content that is less relevant to students with material that is more relevant. This kind of suggestion can be used in a limited school improvement effort or as a specification for systemic change in one or more of the system components of the School Design Statement.

The principal and school management/design team should examine the entire list of suggested interventions for any targeted variable and select the ones that seem most appropriate. Ultimately this activity would result in a list of priority interventions for the school improvement or systemic redesign effort. The next task is to determine the potential direct and indirect, good and bad effects of each priority intervention. This process will demand both logical analysis and "What If" analysis.

Logical analysis should come first. The principal, leadership team, and staff should explore all the possible effects of an intervention before actually implementing it. The process will resemble the type of interaction that Peter Senge calls "dialogue." "The purpose of a dialogue is to go beyond any one individual's understanding. ... In dialogue, a group explores complex difficult issues from many points of view. Individuals suspend their assumptions but they communicate their assumptions freely. The result is a free exploration that brings to the surface the full depth of people's experience and thought, and yet can move beyond their individual views" (Senge 1990a, p. 241). Logical analysis may confirm or exclude an intervention. Those that are retained should then be subjected to the "What If" capabilities of the CASE-IMS program.

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**FIGURE 5.10**

DATE: October 19, 2004

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Demonstration High School

**POSSIBLE INTERVENTIONS TO IMPROVE SCHOOL CLIMATE**

\* These are suggestions \*

\* You must decide whether they meet local needs \*

\* They do not guarantee change in the desired direction \*

5.01: Improving Curricular Relevance — Each year form a task force to assess the relevance of one curricular area. Charge each task force with the task of replacing curriculum content which is less relevant (from the point of view of learners) with material which is more relevant.

5.02: Teaching Responsibility — In your school's statement of beliefs and values, dedicate the school to teaching students to be responsible for their own behavior. Offer students frequent opportunities to exercise responsible behavior by expanding student-initiated learning activities (independent study), by building learning options into the curriculum, by delegating substantial responsibilities to student organizations, and by encouraging self-evaluation of learning outcomes.

5.03: Orientation of New Students — Initiate or strengthen the school's orientation for new students, including such activities as "Big Brothers" and "Big Sisters." Emphasize to new students the opportunities which the school offers for responsible behavior.

5.04: Recognize Cultural/Ethnic Diversity —As one means of encouraging students to respect one another, sponsor special programs and activities to recognize and celebrate cultural/ethnic diversity (e.g., Martin Luther King Day, Cinco de Mayo, etc.).

5.05: Tobacco/Alcohol/Drug Use Prevention — Strengthen the school's efforts to prevent tobacco/alcohol/drug use with a variety of strategies, including formal instruction, self-esteem building, peer pressure, and refusal skills training. Integrate prevention activities into units of instruction throughout the curriculum.

5.06: Individual and Group Counseling — Strengthen the school's individual and group counseling program so that students receive assistance in handling personal problems and interpersonal relationships. Include peer counseling and teacher advisement as key components of the program.

5.07: Cooperative Team Learning — Provide inservice training and follow-up support for teachers on cooperative team learning. Assist teachers in their efforts to apply cooperative team learning techniques. Encourage students to assume progressively more responsibility for their own learning.

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*What If Analysis.* CASE-IMS "what if analysis" is based on a research concept called path analysis. Since the 1960s, path analytic techniques have been refined and used more widely in educational and sociological research to examine complex causal relationships. These advances were stimulated by earlier work in the fields of genetics and economics. Path analysis allows the researcher to cast the complex interrelationships among variables in mathematical terms and to understand the direct and indirect effects of one variable on another based on a causal model derived independent of the data. The model used in CASE-IMS research is the Interactive Model of the School Environment (Figure 5.2), which views the school environment as a series of causal relationships between the structures of the community, school district and school (inputs), mediating factors (climate), and student outcomes. NASSP research (Schmitt and Doherty, 1988) supports the general framework of this model and the central role of climate in the model.

These path analytic equations are built into the CASE-IMS software and allow the user to estimate the change in any student outcome score that would result if the school implemented interventions intended to affect different input or mediating variables. In other words, the program allows you to ask "what if" questions. For example: What if the school changed its emphasis on its goals, or modified the elective program, or budgeted more resources in key areas, or raised the level of teacher climate? What if all these variables were changed at the same time? What would it take to raise student satisfaction or achievement by 5 percent? Ten percent? The CASE IMS program can help answer these kinds of questions.

The program's What If command asks you to select one of the six student outcomes and then to specify the changes you hope to make to the input or mediating variables that are found in the path equation for that outcome. To illustrate, we can select the Student Self-

Efficacy outcome using the Demonstration High School database in the program. The software enables the user to view the related (predictor) variables in the path equation for Student Self-Efficacy and to make any desired changes. The user also can view and print out a list of the variables that affect each outcome (by using the “List All” navigation command of the program). Figure 5.11 shows the list of variables that affect the outcome variable of Student Self-Efficacy in the Demonstration High School database. The user can select and change the values of any of these variables to see how they affect the outcome.

**FIGURE 5.11**

**A LIST OF VARIABLES THAT AFFECT THE OUTCOME VARIABLE**

**Student Self-Efficacy (SEFFSCL)**

<b>Variable Description:</b>	<b>CASE Variable:</b>
School’s Administrative Team Performance	ADMNPERF
Proportion of Activities with Budgets	BUDGRES
Difficulty of Introducing Change	CHGSCL
Average Number of Electives Per Area	ELECT
School Governance Structure	GOV
Students with Free/Reduced-Price Lunches	LUNCH
Percentage of Minorities Enrolled	MINORITY
Population Category	POP
Principal Perception of Participation	PPARTSCL
Professional/Personnel Ratio	PROFRAT
Households with School-Age Children	SCHATT
Student Climate	SCLIMSCL
Nature of Student Dress Rules	SDRESRUL
Nature of Student Employment Rules	SEMPRUL
Student/Teacher Ratio	STRATIO
Teacher Satisfaction	TSATSCL

Suppose, for example, we believe that Demonstration High School Teacher Satisfaction can be improved from its present value of 2.80 (low average) to 4.0 (above average). It is probably unrealistic to think that such a large change could be achieved in a short time, but it will provide an estimate of a large “what if “effect for our illustration. Figure 5.12 illustrates this “What If “printout for Student Self-Efficacy. The change in the Teacher Satisfaction score from 2.80 to 4.00 is displayed in the lines below “SCENARIO.” The rectangle shows a percentile scale at the top and a T-score scale at the bottom. A bar graph of “A’s” represents the Actual school value (a T score of 35 and a percentile of about 7) and a bar graph of “E’s” the Estimated value (a T-score of 43.8 and a percentile of about 25).

**FIGURE 5.12**

SCHOOL: Demonstration High School  
DATE: October 3, 1996

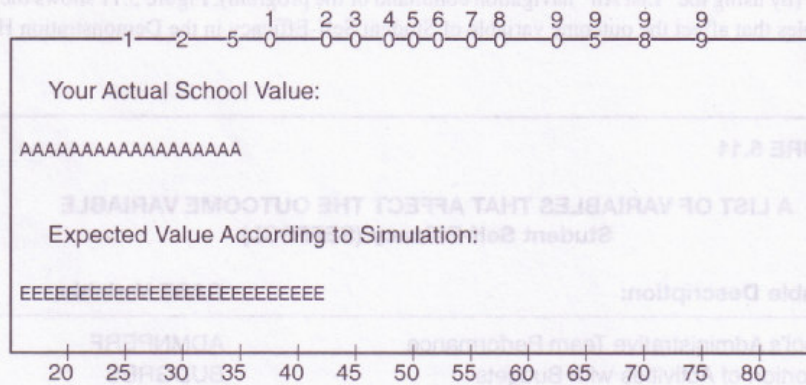
**WHAT IF ANALYSIS**

OUTCOME VARIABLE: Student Self-Efficacy (SEFFSCL)

SCENARIO:

KEY: CASE Variable, Actual Value, (Simulated Value)  
TSATSCL, 2.80, (4.00)

Percentile (Using NASSP national sample):



T-score (Using NASSP national sample):

RESULTS: Your actual T-score for SEFFSCL is: 35.00  
Your simulated T-score for SEFFSCL is: 43.80  
Expected gain (measured in a T-scale) is: 8.80

\*Changes greater than 3 can be considered educationally important.

PLEASE NOTE: Expected gains are based on average future performance. They are NOT firm predictions of what would happen in your particular school if you were to implement what you have simulated here. You should use the results ONLY as a reference frame for planning.

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Information from What If analyses can be used with the earlier logical analyses to guide the principal and school management/design team in selecting useful interventions for school improvement or comprehensive design. Together with the information base derived from the locally based literature search (see Chapter 6), these analyses provide the raw material for developing the preliminary School Design Statement, writing and setting priorities among specifications, and implementing action plans.

## Summary

The CASE-IMS program can support a six-step process leading to a database for school improvement or comprehensive design/redesign. These are the steps:

1. Generate the basic CASE-IMS Profile, the Climate and Satisfaction Profile, and the Item Categories Report (if needed).
2. Use the profiles and graphic displays to identify high or low scores on CASE variables and to compare the climate and satisfaction score patterns of teachers, students, and parents.
3. Link any important pattern differences on climate and/or satisfaction to high or low CASE variable scores.
4. Identify promising interventions using both logical analysis and the CASE-IMS interventions bank in the program.
5. Explore the possible effects of each promising intervention using both logical analysis and the What If analysis of the program.
6. Develop the School Design Statement, priority specifications, and action plans based on the locally based literature search and the CASE-IMS information gathering process.

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