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ABSTRACT

Applying matrix organizational structure to the organization of special education services is the focus of this paper. Beginning with a list of ways in which educational organizations differ from business or military organizations, the author warns that educators must be cautious when transferring organizational structures from other disciplines to education. He then examines current and emerging forces on education to illuminate the question of whether traditional organizational structures for schools are still appropriate. The history of special education is then reviewed, focusing on the shift from segregation of the handicapped to placement in the "least restrictive alternative," with an emphasis on the new demands this has placed on the organization of special education. Avoiding a definition of matrix organizational structure, the author instead demonstrates how two different matrix organizational structures might be applicable to special education. Under one such organization, the common supervisor would be the superintendent of instruction and matrix managers would be the supervisor of special education and the building level principal. Advantages and disadvantages of the organization are listed. Finally, the author recommends that matrix organization be considered for its efficacy in addressing some of the emerging concerns in special education. (Author/JM)

MATRIX ORGANIZATIONAL STRUCTURE AND ITS EFFECTS UPON EDUCATION ORGANIZATIONS

James R. Yates

An assumption of this paper is that the way in which an organization is structured does, in fact, make a difference in terms of the delivery of the organization's mission. The validity of such a statement seems self-evident as almost all organizations do in fact have some formalized structures that can be described, illustrated or charted. There are chains of command, lines of authority, procedures of operation and linkages of components.

Organizational theorists have concentrated research and writing on the conceptual and pragmatic issues of organizations. Business organizations and the military have devoted significant time and attention to implementing organizational structures. Of interest here is the fact that while educational institutions have formalized structures, they probably remain one of the last complex organizations in our society to recognize that structure is a significant resource in achieving goals of organizations (Stanford, 1966).

Distinctions of Education and Other Organizations

Much can be learned by examining with care the use of organizational structure by the military and the business world, but it must be done with caution. Educational organizations are unique and this uniqueness demands care in generalization..

A. Educational organizations are not absolute hierarchies of authority. Where the chain of command is a known element of the military, a chain of command is often a questioned assumption in educational organizations. While there may be superintendents, assistant superintendents, supervisors, principals and so forth, it is very clear to those who have worked in educational environments that "when the teacher closes the classroom door," the teacher is in fact in command and control.

B. The missions or goals of education are unique from those found in the military or industry. Very few organizations have as many complex and unique missions and goals as education. For example, education is required to transmit societal values. One need only examine the kinds of standards of both on and off the job behavior that are required of "school teachers" to understand that schools in and of themselves have a unique mission in that society demands of schools transmittal of societal values. In addition, schools are unique in that they have as a mission to provide educational opportunity for all of the youth of this country. School attendance is compulsory. Not only is educational opportunity required but equal educational opportunity is a stated goal for the educational system. Therefore, not only must all participate in education, but the institutions of education are required to provide equal opportunity to all participants.

C. Conceptually, the military has a commander-in-chief, the President of the United States, elected by populace, but most military decisions are made by career officers who answer to the organizational hierarchy. Corporations have a board of directors that may be elected by stockholders

representing the general populace, but real linkages to the public are weak and corporate officers make most decisions. However, educational institutions have ultimate decisioning and policy making authority residing in boards that are elected by the populace. Such a structure reflects the philosophical value assumption of education in this country that education is a local or decentralized function. Therefore, the ultimate decision making authority in education is decentralized with a limited number of required linkages to other units of the system. Additionally, patrons of schools often feel they may directly contact the school board. Few feel such freedom with military or corporate officers.

D. Individuals in educational organizations are described as professionals. As such, they have different assumptions and commitments than individuals within most other organizations. That is to say, the teacher is by philosophy one that perceives activities within the educational organization as something more than "just a job."

E. The products of the educational system unlike products of the military and of the business establishment are very difficult to identify, measure and are of extremely long term effect. Specifically, the ultimate product of the educational system may not be available for observation and judgment relative to its quality until the following generation. While some short term measurements can occur, even those measurements are complicated by whether or not they reflect what is to be the true product of the educational system. For example, are products to be judged by the level of literacy of students; are they to be measured by the level of assimilation

of students into the broader society; are they to be measured by the ability of the student to provide a contribution to the broader society; are they merely measures of attendance or standardized achievement scores of one class or of one student.

F. Education is a human labor intensive organization to a far greater extent than in business or the military. That is to say, approximately 80% of activities and resources of educational organizations are related and tied to humans. The "tools of the trade", so to speak, are individuals who occupy various roles and positions within the educational organization. Not only are most of the activities within an educational organization dependent upon human activity, the majority of these humans are what one would term "professionals."

G. The roles and positions within educational organizations are extremely ambiguous. There are difficulties with responsibility as many activities within an educational organization call for mutual, alternating as well as exclusive responsibilities relative to the same general problem, e.g., a child with learning problems. In addition to the complexity that such ambiguity introduces, many decisions must be made as a result of multiple and unclear responsibilities. Even though it is somewhat clear that the "teacher" has responsibility for instruction and management of a certain defined number of students, multiple decisions complicate the teacher's role. To illustrate, what is the content to be taught? When is it to be taught and for how long? What method of instruction is to be used? What instructional materials shall be utilized? What is the

learning style of the student? What is the student's best instructional modality? Where should instruction take place? (Gross, 1963).

H. Educational organizations are extremely decentralized in comparison with the military or business organizations. Decentralization can be couched in terms of Board of Education "local control," or the exclusive responsibilities and judgments of the teacher as "the door of the classroom is closed," or decentralized decisioning associated with various units such as the local elementary school, the school principal, the school psychologist, and so forth.

I. There is an expectation within educational organizations that there will be participatory decision making to a greater extent than typically found in either the military or the business organization. The concept of participatory decision making is fed by a number of variables such as the large number of professionals, societal expectations and so forth. In addition, all citizens have been members of the educational system and are therefore "expert" while not all have been in the military or have been connected to the business world.

J. There is the expectation that educational organizations will transfer knowledge and values. Neither the military nor business organizations have as a major goal or objective the transmission of knowledge and values. Such training is secondary, incidental or task specific.

K. Educational organizations have unique accountability demands. While significant effort and attention may be devoted to the measurement of

teaching, the difficulty is significantly greater than found in measuring the product of the military or business organization, i.e., battles are won or profits are made. Specifically, the educational organization is uniquely contaminated in terms of product measurement by variables that are totally outside of and beyond the scope and control of the organization. For example, the following variables have been shown to be significant but are mostly beyond control of schools: socioeconomic status of the parents; heredity; parent education; developmental stage of the student; interest, motivation, concern, and skill of parents in their parenting role.

Such unique characteristics pinpoint the problems and inability of organizational structures found in other institutions to be totally viable in educational organizations. Historically, there have been attempts to totally generalize such organizational structures, e.g., the medical model of diagnosis and treatment for students with school difficulties. Therefore, educators must be cautious but alert to the opportunity to transfer organizational structures from other disciplines to education.

Educational Organization

The historical structures of education have changed little over time, that is to say, the local school building with an individual designated in some way to administer or to head that unit of the system. As education expanded and as society became more urban and correspondingly school systems became larger; additions to the organizational structure were made and there was assumed linkage and coordination between these increasing structures. As schools become more "public," there were needs for more

services and expanded types of programs and activities. Correspondingly, expectations of patrons expanded. These requirements of the system brought a need for larger numbers of diverse units into the organization. No longer was there the "school house," principal and a few teachers but there were specializations in curriculum areas, transportation, food services, special education and so forth.

The question posed at this time is: are traditional organizational structures of schools appropriate in the 1980s and beyond. Specifically, does the current and emerging context of education require shifts or changes in the traditional organizational structure. An examination of current and emerging forces on education may shed some light upon this question.

Forces in Education

A. Demography - Census data now makes it relatively clear that the United States is stabilizing in terms of population growth and it can be expected that a decline in school age population will continue in terms of elementary age students until approximately the year 1985. Schools will not have recovered the number of students that were enrolled in 1975 until approximately the year 2000. Additionally, the mean age of the U.S. population is increasing.

B. There is a significant increase in the types and sophistication of technology available. For example, while many of the hopes and aspirations of the 1960's for computer technology associated with instruction were

unfulfilled, it is now relatively clear with reductions in cost, size and availability of the "mini-computer" and renewed interest and marketing of such systems by the computer industry, such technology will affect the ways that schools are organized for instruction.

C. Shifts in funding patterns are emerging and have been experienced by large numbers of school systems. The latest example that has caught the attention of the media is the "Proposition 13" type of legislation. Of less national notoriety but of more consequence in many local school districts, is the continuing failure of bond or millage increases. Associated with such shifts in funding patterns are a large number of legal rulings and an increasing body of case law which directly affects the types and kinds and configurations of services which may or must be provided by public schools.

D. There are clear shifts in power configurations associated with the public schools. The trend toward pluralistic, decentralized decision-making reflects such shifts. An additional example would be effects of collective bargaining, federal government regulations, and so forth.

E. There are shifts in educational need. As society has moved toward shorter work weeks, earlier retirement, less requirement for manual labor and so forth. The types, places and times of education need have changed. The requirement for different educational products delivered at different times in the life span of the individual is developing as a significant force.

F. There are dramatic shifts in societal values. Perhaps no societal force is discussed as frequently as shifts in values. The traumas and experiences of the public schools as they have moved through desegregation and associated phenomena such as busing, the opening of the system to handicapped and disadvantaged and the introduction of curriculum associated with humanistic or moral education illustrate the bounds and significance of this force.

The question raised by the discussion of these forces is simply this: are the past structures that have been utilized in education sufficient for the future? To answer this question, let us look at one service delivery area of education, special education.

Special Education Example

The history of special education in the public schools describes a minimal commitment by the educational organization to handicapped students. For the most part, special education began with programs for the physically handicapped which were initiated primarily due to parental pressure and work of advocacy groups. As a result, the educational system made few concessions to this particular area and logically, few if any structural changes in the system were felt necessary. The addition of minor appendages to the overall system was the primary mechanism of adaptation.

As the demand for special education services grew and as the types and ranges of handicapped children to be served diversified, the system had to make more formal, structural adaptations for special education. The result

was for the most part, the creation of a dual educational system. Specifically, school systems created a parallel structure to the regular education system utilizing the same traditional structures as were historical within school systems but placing them in a parallel arrangement. As a result, for the special education system there developed: uniquely designated and perhaps uniquely trained administrators; other uniquely certified professionals; separate budgets; separate instructional materials; unique personnel roles and unique policies and procedures were put into place. All such changes were structural adaptations to special education demands.

Insert Figure 1 about here

The effects of the dual system were that special education students were placed, special education personnel provided service and special education resources and facilities were utilized, all requiring little or no interface or interaction with the parallel regular education system. The necessity of administrators, supervisors, teachers or support personnel interacting with parallel educational systems was almost non-existent.

For the most part, this structure satisfied both special education professionals, parents and regular education professionals and parents given the embryonic stage of special education knowledge and service delivery. However, there began to emerge new conceptualizations associated with delivering appropriate services to the handicapped. In addition there developed stronger and more powerful lobbies, and advocates for equality of

facilities and services for the handicapped. As a result, the system began to have specific demands placed upon it for interface between the dual educational systems. The result was discomfort and a number of less polite descriptive adjectives relative to these required or forced interfaces. But the system was faced with the demand for adaptation of its structures. Resulting adaptations were made within the context of the traditional educational system, primarily specific linkages were described and articulated between the previously defined dual educational systems. In other words, there were defined lines of authority and lines of support or consultation articulated which supposedly would meet the requirements being made upon the system for an integration or interface of the two systems.

Insert Figure 2 about here

These adaptations are the most common existent circumstance within school systems. Most school systems have traditional organizational structures similar to a pyramid or bureaucratic, power at the top structure. Such modifications of the structure were designed to deal with complexity, to provide specific communication and decisioning linkages, to develop required specializations and to reduce conflict and competition. So long as there were no specific questions raised as to responsibility or "ownership" of the handicapped child or teachers of the handicapped, such structural adaptations seemed to work fairly well. However, conceptualization, advocacy and understanding of the needs of the handicapped, precipitated what today is known as "least restrictive alternative" place-

ments. Such legislated and legal requirements for least restrictive alternative immediately raises questions associated with ownership of special education students, personnel and services. Such questions produce greater ambiguity for the system. The result of these demands has been: poor integration of students; difficulty with transfer and linkage between service delivery elements; budgeting and accountability confusions; unclear responsibility relative to personnel recruitment, selection, evaluation, unclear ownership relative to instructional materials, facilities; scheduling difficulties; conflicts associated with community and parent interactions; difficulty with inservice and staff development requirements and so forth.

One begins to wonder whether the system of education may not be at another milestone or watershed point relative to adaptation of its organizational structure. The question emerges as to what may be an appropriate adaptation.

Matrix Organization

The structure suggested in this paper is not a new structure. It has been described in the business literature since the early 1960s (Jengen, 1963). It carries a number of descriptors but perhaps the most common descriptor is matrix organizational structures. Matrix organizational structures were an effort on the part of the business world to effect adaptation to some of the same variables that currently impinge upon education and special education, i.e., specifically to develop adaptation to growing complexity and confusion associated with role, function and scope of acti-

vities. Business organizations begin to discover that they were both unable in terms of cost effectiveness and in terms of available personnel to continue to create new roles, new positions, new divisions to respond to an ever increasing change in either marketing, production or policy requirements.

Originally matrix structures were conceptualized as dealing with temporary work or projects. Currently, such structures are utilized for temporary work or projects but also as permanent organizational structures. The list of well-known corporations that use some form of matrix organization is quite lengthy and continues to grow: IBM, Phillips, Volvo, Honeywell, Texas Instruments, GE, Shell Oil, etc., all are involved in matrix organizational structures (Davis & Lawrence, 1978; Janger, 1979).

There are three required roles of the matrix organization: 1) matrix subordinants, 2) matrix managers, and 3) common superior.

Matrix subordinates are roles that implement specific plans and do specific work within an organization. Matrix managers are of two types, often called "business result managers" and "resource managers." Generalizing to the context of the educational environment, business result managers would be comparable to individuals who have exclusive responsibility for program and instruction. Resource managers would be equivalent to administrators who develop and provide facilities, financial resources, materials, etc. The common superior is the individual to whom matrix managers report. The common superior has similar responsibilities and functions as one might think of in an arbitrator or a judge. There is

very little input from the common superior, but there is final decisioning or judgment on issues in which there are differences of opinion or situations that require decisions or arbitration.

Insert Table 1 about here

The rationale that business organizations have used for the application of the matrix organization are: 1) they deal more effectively with increasingly interdependent and related kinds of activities or markets. The equivalent in the educational organization would be increasing requirements for interface or integration of programs of regular and special students, 2) faster product obsolescence. Comparable status for education would be dramatic shifts in service delivery models, 3) increased government regulation, 4) intradependent parts of the organization, 5) increased demands to respond to special interest groups and 6) cost reduction demands would be equivalent between business, industry and education organizations.

The matrix organization is based upon the concept of a balance of power, where bargaining "chips" parity, negotiation, discussion and arbitration are constant features of the system (Galbraith, 1971). Such features imply the necessity of adequate information and continual access to the various roles within the matrix organization.

Insert Figure 3 about here

Two possible matrix organizational structures applicable to special education are illustrated. For smaller organizations, smaller school

systems, it might be possible to develop a structure in which the common supervisor or superior is the assistant superintendent for instruction; matrix managers are respectively the director or supervisor of special education and the building level principal. Functions under the director of special education that would be assumed or directed by various matrix subordinates might be the IEP development implementation, instructional material and equipment utilization, personnel selection, student evaluation. Under the building principal might fall specific functions such as transportation, salary, hospitalization, facility designation, equipment and material purchase, parent community communication, pupil/teacher assignment, personnel evaluation.

For larger educational organizations, a matrix multidimensional organizational structure might have a common superior of an assistant superintendent for instruction; matrix managers of a director of mild/moderate programs for the handicapped and a director of severe/profound programs for the handicapped. Matrix subordinates operating in relationship to the two designated matrix managers might be personnel selection, through the director of personnel; the director of transportation for transportation; director of psychological services for assessment functions; the director of instructional supervisors for IEP development implementation; the building principal for management of the instructional environment and so forth.

Insert Figure 4 about here

Yet another possible structure could be a multi-level organizational matrix for special education in which matrix managers would report once again to a common superior of an assistant superintendent for instruction. The matrix managers would be supervisor of secondary special education, supervisor of elementary special education, supervisor of pre-school special education, supervisor of developmental programs for community college. Once again, by illustration, these matrix managers would interact and receive expertise and support for the functions through the similar matrix subordinates of transportation and so forth.

Insert Table 2 about here

Within any organization, duties or responsibilities are often capable of being designated as either 1) exclusive, to an individual role or position, 2) joint or shared between roles or positions and 3) alternating between roles and positions. Within the matrix organization, the designation of role responsibilities is extremely important. For example, there could be roles of assistant superintendent for instruction, principal, psychologists, instructional supervisors, special education teacher, regular education teacher, director of special education and duties of selection/assignment of special education personnel, IEP development/implementation, evaluation of special education personnel, instructional materials selection and so forth. There could be a designation of responsibility as prime responsibility, consultation relative to decision, final decision. The implementor, or the one who performs the function checks to

see if decisions are implemented and/or authorization for submission of decisions to higher authority. Such responsibilities could be coded relative to the type of activity and the specific role for that activity. For example, it could well be that the assistant superintendent has final decision authority associated with the selection and assignment of special education personnel. However, remembering that the common superior in the matrix organization would typically not have input into the decision until there was disagreement and need for arbitration or a final decision; therefore the principal, instructional supervisor and the director of special education might all be individuals who should be consulted relative to the selection assignment of special education personnel.

Advantages of Matrix Organizations

There are a number of advantages for the matrix organization.

1. Problems can be noted more quickly and responded to with greater speed.
2. Needs of the organization can be dealt with effectively within unique projects or functions.
3. There is often more effective training of those lower in the organization structure because of their interaction with greater frequency with upper levels of the organization.
4. Specialized personnel may more easily apply their specialty.
5. Control and authority for a project is more easily maintained.
6. It is easier to create the opportunity for organizational members to assume responsibility.
7. Thorough evaluation and planning become a part of the ordinary functioning of the organization.

8. Flexibility for adaptation is easier than within traditional structures.
9. Should the need arise, it is easier to dissolve or to dismantle the project or functions.
10. Different roles within the organization are more easily oriented and exposed to each other.
11. There is a reduction of the span of control than is found in traditional organizations.
12. Project managers or matrix managers have a sense of true control and authority.
13. There is a reduction of the complexity the larger traditional organization structure.
14. The voice or opinion of those lower in the organization structure is more easily communicated and listened to.
15. Communication is more direct and less likely to be misunderstood.

Disadvantages of Matrix Organization

There are a number of problems and disadvantages associated with the matrix organization. Typical problems of the matrix organization are: 1) the leadership style of the "boss" is oftentimes incompatible with matrix organizations; 2) strained relations with peers can occur; 3) the various strengths and weaknesses of individual members become more obvious; 4) there is the need within matrix organizations to broaden management, organizational skills and knowledge of the traditional expert or specialist within a content area; 5) line and staff relationships often blur or disappear; 6) there are frequent and oftentimes "too many" meetings; 7) disagreements are very clear and obvious between staff; 8) differences occur in decisions which oftentimes require arbitration or ultimate authority decision making; 9) gamesmanship and/or manipulation can occur within the matrix organizational structure.

Organizations that feel they wish to initiate matrix organizational structures should be aware that common superiors and matrix manages require 1) a broad knowledge of the system and its personnel; 2) general management expertise or aptitude; 3) group skills; 4) attention to detail with evidence of the ability for consistent follow through; 5) conflict orientation and resolution skills; 6) acceptance and tolerance of ambiguity; 7) self and peer reliant, that is to say, internally directed and; 8) communications skills.

It is also clear that strong staff development programs would be required in a matrix organization for the various roles. Such programs would need to include components such as 1) training in the content roles found within the organization; 2) training in interpersonal skills; 3) training in analysis and presentation of ideas in groups; 4) team building and organization development.

Rules of Matrix Organizations

In decisions related to the planning of a matrix organization structure, certain decision rules should be noted:

1. There must be participation of key or upper level administrators;
2. Involvement of outside experts in planning, organizing and monitoring is frequently helpful;
3. Matrix managers and subordinates must work out their own roles, responsibilities relationships as the matrix organization is developed;
4. Structures and elements of the organizations should be thought of as formative with the process of alteration and adaptation seen as part of the overall planning of the structure;

5. formalized systematic planning is required. Such planning would include formal role responsibility specification, planning and control systems that are specific and formalized and continuing appraisal evaluation systems.

As special education develops greater complexity with more external and internal demands, it may be that the matrix organization should be reviewed and evaluated in terms of its efficacy for addressing some of the emerging concerns in special education.

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Table 1

RATIONALE FOR MATRIX ORGANIZATION

BUSINESS/INDUSTRY

1. INCREASING RELATED & SEQUENTIAL MARKETS
2. FASTER PRODUCT OBSOLESCENCE
3. INCREASED GOVERNMENT REGULATION
4. INTRA-DEPARTMENT PARTS OF THE ORGANIZATION
5. INCREASED DEMANDS TO RESPOND TO SPECIAL INTEREST GROUPS
6. COST REDUCTION DEMANDS

EDUCATION/SPECIAL EDUCATION

1. INCREASING REQUIREMENTS FOR INTERFACED/INTEGRATED PROGRAMS FOR REGULAR AND SPECIAL STUDENTS
2. DRAMATIC SHIFTS IN SERVICE DELIVERY MODELS
3. INCREASED GOVERNMENT REGULATION
4. INTRA-DEPARTMENT PARTS OF THE ORGANIZATION
5. INCREASED DEMANDS TO RESPOND TO SPECIAL INTEREST GROUPS
6. COST REDUCTION DEMANDS

Table 2

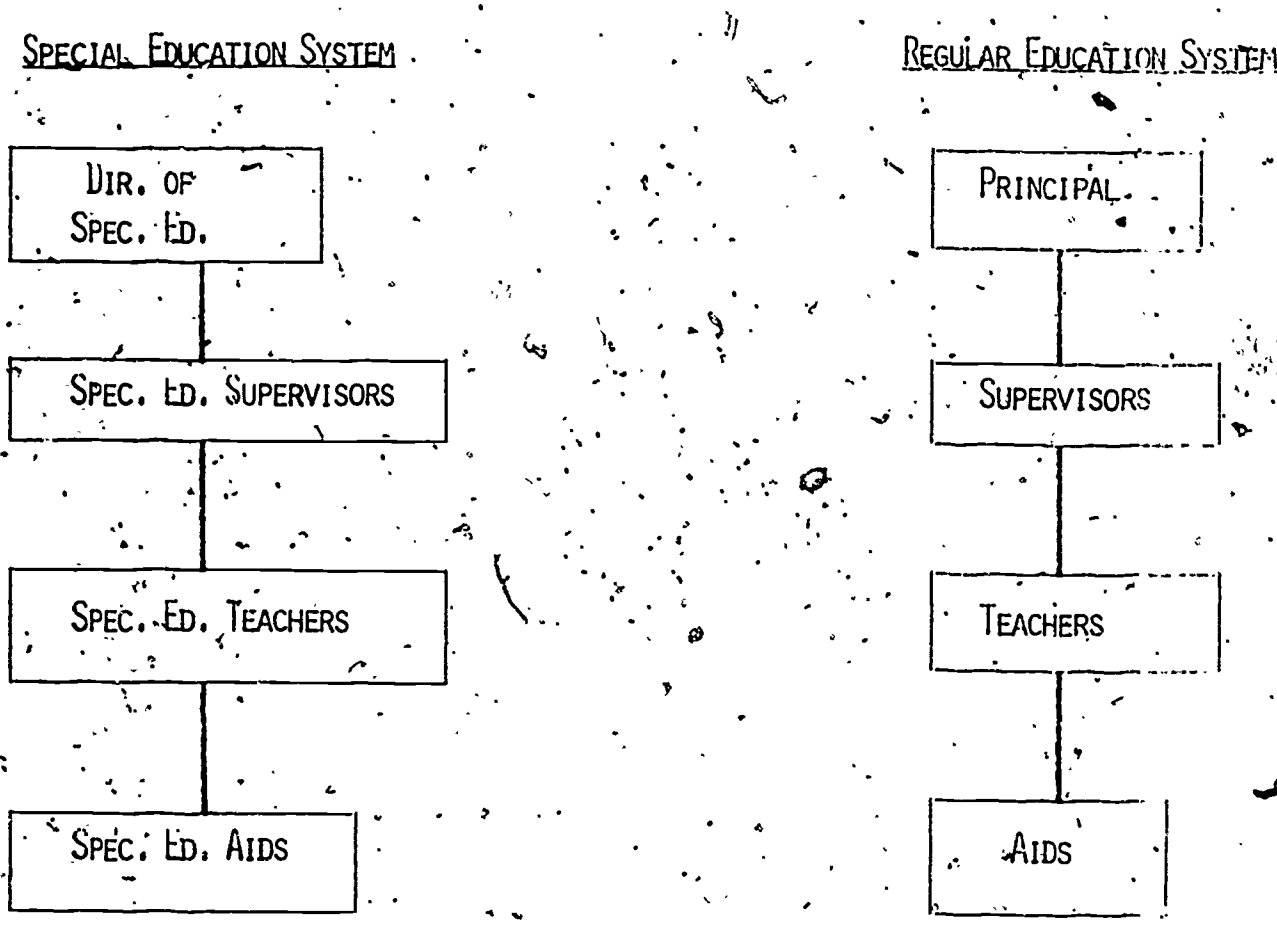
MATRIX ROLE RESPONSIBILITIES

	ASST. SUPT. INSTRUCTION	PRINCIPAL	PSYCHOLOGIST	INSTRUCTIONAL SUPER.	SPECIAL ED. TEACHER	REGULAR ED. TEACHER	DIRECTOR OF SPECIAL ED.	ETC.
SELECTION/ ASSIGNMENT OF SP. ED. PERSONNEL	3	2, 6		2			2,4,6	
IEP DEVELOPMENT/ IMPLEMENTATION		2	1	2,5	2	2		
EVALUATION OF SPEC. ED. PERSONNEL	3	4,6		2			2,6	
INSTRUCTIONAL MATERIAL SELECTION		3,5		2	1,2	1,2	2	
ETC.								

1) PRIME RESPONSIBILITY FOR STARTING/STIMULATING ACTION
2) HAS TO BE CONSULTED (HEARD)
3) FINAL DECISION
4) THE ONE WHO DOES IT
5) CHECKS TO SEE IF DECISION IMPLEMENTED
6) AUTHORIZED TO SUBMIT DECISION TO ANOTHER ECHELON

Figure 1

DUAL EDUCATIONAL SYSTEM



SPECIAL

1) CERTIFICATION
2) BUDGETS
3) INSTRUCTIONAL MATERIALS
4) PERSONNEL ROLES
5) POLICIES/PROCEDURES

Figure 2

TRADITIONAL EDUCATION SYSTEM

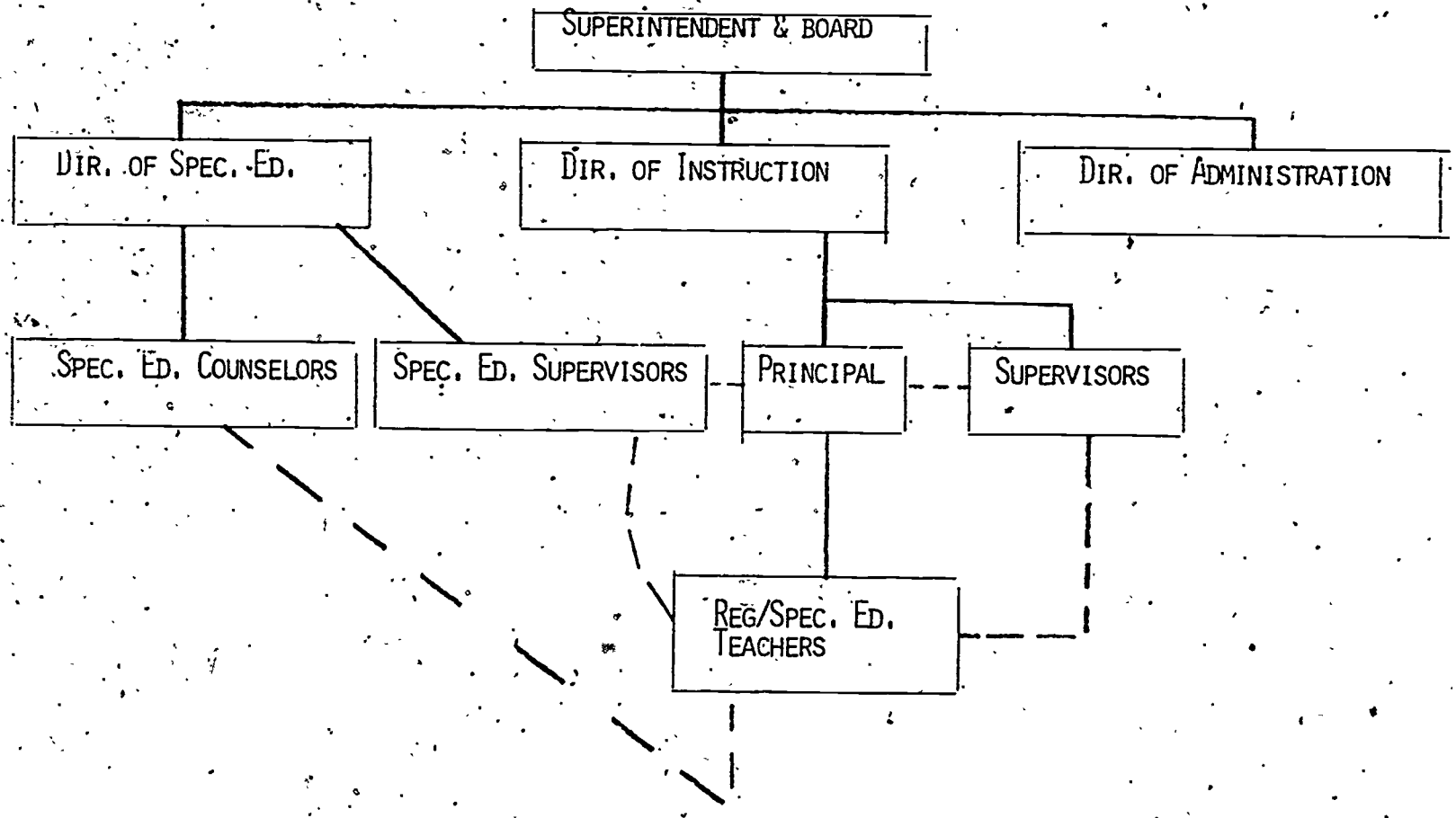


Figure 3

SPECIAL EDUCATION MATRIX ORGANIZATION

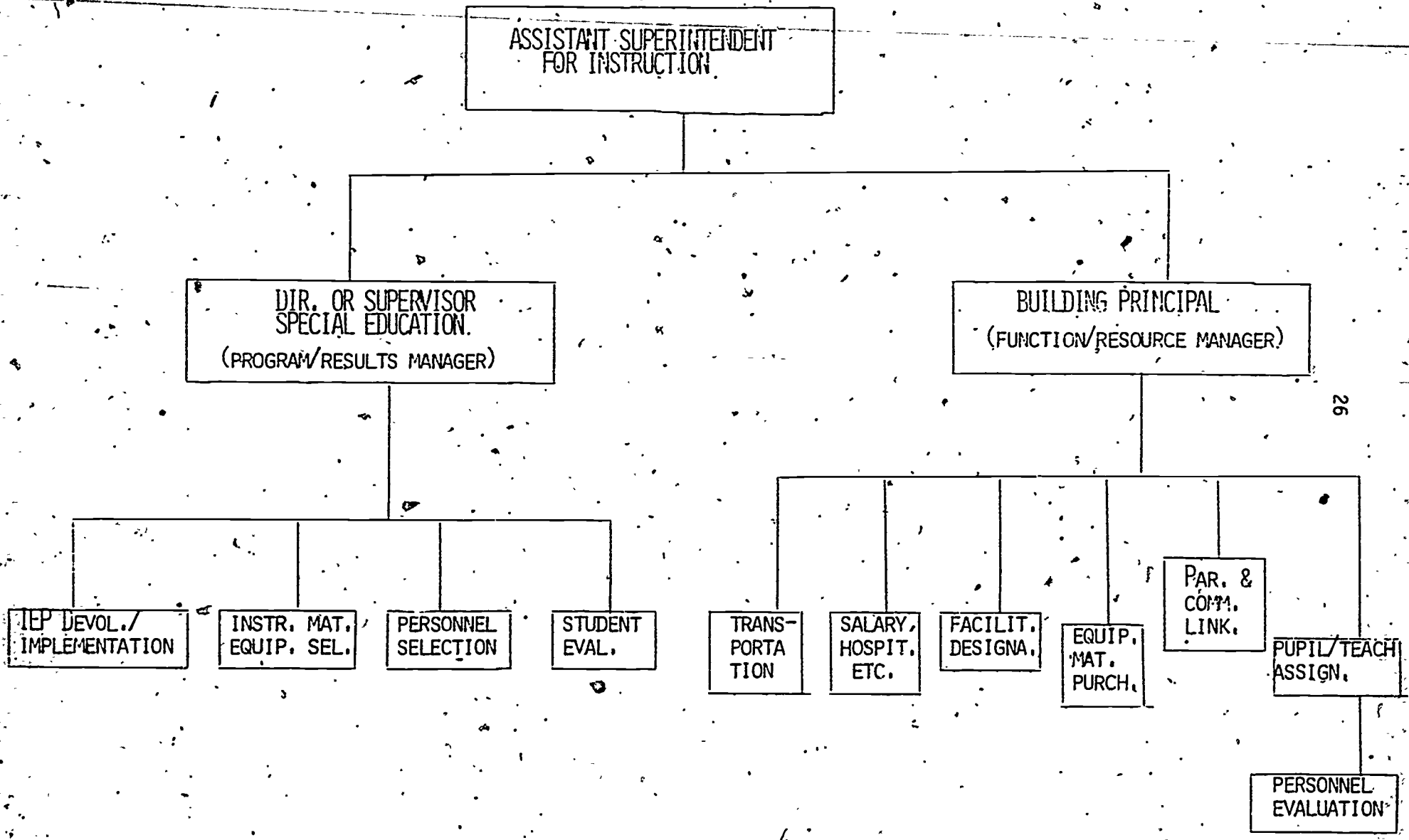


Figure 4

MULTILEVEL ORGANIZATION MATRIX SPECIAL EDUCATION