Facility for Multiply Handicapped Deaf Children
Indiana School for the Deaf

Ken W. Gantz
Thesis 1972
Ball State Univ.
This project concerns children of a very complex nature of which we know very little about. This is reflected in the many different opinions of what exactly to do with these multiply handicapped deaf children and in what way. After researching this field, I have formed certain ideas. However, I have learned to avoid the approach of the detached architect who imposes his singular idea on people who alone must live with the hard product. My intention has been to offer a building pattern instead of a single unchangeable design. This building pattern represents flexibility to accommodate many different ideas and philosophies whose concern ranges from the basics; such as the chosen site, ratio of children per home, and given activities; to the minor details, such as color, building materials, and lighting.
Due to course requirements, I chose one specific design arrangement and finalized it through to the working drawings portion of work. This design was selected primarily because of my preference for it. Critics may find this arrangement very poor, but they must not extend their criticism to the entire study without studying the system or design pattern of organization suggested and its many alternative designs.

Although I claim that the pattern is very adaptive to different ideas and philosophies, certain institutional aspects were avoided in all alternatives. For example, I have always maintained the idea of individual homes. There was never a desire to create one large dormitory as an alternative.

Multiple handicaps were assumed to imply deafness or hard of hearing in addition to one or more handicaps such as blindness, cerebral palsy, orthopedic handicap, emotional disorder, mental retardation,
and learning disability. The rate of incidence of handicaps was assumed to be similar to that as found by McCoy Vernon in California. The total number of children expected to use the building would be a limit of 126. Each home was expected to have 10 to 14 children with 2 house parents. The number of homes would reach 9. Three homes would constitute a cluster with 3 clusters for the entire complex. Some variation of these figures can be accounted for in the design pattern.
**Goals**

**Physical**
- Encourage the use of the good senses
- Stop the deterioration of the handicapped senses
- Encourage the use of these handicapped senses
- Provide a variety of social contacts
- Recognize the individual as well as the group
- Allow for personal rate of socialization
- Develop for independence (or semi) at an adult age
- Create a total learning environment
- Organize and associate a variety of learning experiences
- Prevent boredom in design
- Provide stimulating and fun learning material and equipment

**Social**

**Mental**

**Emotional**
- Establish a personal character
- Create a relaxing and comforting surrounding
- Establish security and familiarity
- Create an honesty of design and philosophy
Provide a flexible, changing environment
Recognize and respond to changes in basic
philosophies or architectural mistakes
Create similarities to reality without sacrificing
honesty and satisfaction of the child's needs
Provide options for the child, instead of a
demanding one way course
The following information was derived from a study of multiply handicapped deaf children, of three to twenty-one years of age, from the California School for the Deaf, Riverside, California. These children represent the time period between 1953 to 1964. The date of this study by McCay Vernon was 1969. This important piece of research was primarily orientated to the major etiologies of deafness and its relationship to various characteristics and degree of occurrence. Parts of this study are presented because it can be applied relatively and will establish a realistic background for what problems will be encountered.

Five definite major etiologies of deafness were established from the study of 1,468 deaf children: heredity, RH factor, prematurity, meningitis, and rubella. Two other major categories were listed as unknown and other. Since the first five groups
Heredity   5.4%
RH factor  3.1%
Prematurity 11.9%
Meningitis  8.1%
Rubella    3.8%
Unknown 30.4%
Other      32.5%

Incidence of Other Handicaps

total only 37.3%, it is doubtful that any great advancement in medicine of one or more of these areas will greatly alter this problem in the remaining portion of this century. Nor do I believe that the problem will tremendously increase. For these reasons, this facility for ISD will probably not be replaced by local services nor will it need to increase several-fold beyond the present demand.

Another factor of major importance is the incidence of other handicaps accompanying deafness. Since the study was concerned with this relationship to the etiology of deafness, these figures do not truly represent the degree of occurrence in general. Also, certain groups of etiology or additional handicaps may be screened more from entry than others, thus disturbing these ratios. However, all groups do indicate a large percentage of children with just two or three handicaps. A
substantial number do have four handicaps to warrant proper consideration. Children with five or more handicaps are few in number, and would probably be adequately accounted for in consideration for children with four handicaps.

Of these various handicaps accompanying deafness, the most significant are aphasia and emotional disturbance for two handicaps. Considering three handicaps, the most prevalent handicaps in order are aphasia, cerebral palsy, and emotional disturbance. There was no breakdown of more handicaps. The smallest representative group are the orthopedically disabled who, ironically, are the most demanding in physical design. Partial sight is second lowest in number, but still fairly significant. According to this information, it is not necessary that this facility be designed for large numbers of orthopedically disabled or partially
sighted children. Perhaps if the facility is large enough, some areas may eliminate consideration of these two handicaps. However, this does limit the ability of achieving many options in grouping, and this does not adhere to a philosophy of equal opportunity for all children.
<table>
<thead>
<tr>
<th>Condition</th>
<th>Hereditary (N=52) percentage</th>
<th>Hereditary (N=15) percentage</th>
<th>Premature (N=92) percentage</th>
<th>Premature (N=104) percentage</th>
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<tr>
<td>Cerebral Palsy</td>
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<td>3.5</td>
<td>1.9</td>
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<tr>
<td>Aphasia</td>
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<td>5.4</td>
<td>9.6</td>
<td>12.5</td>
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<td>1.0</td>
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<tr>
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<td>28.3</td>
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<tr>
<td>C.P. &amp; Aphasia</td>
<td>4.8</td>
<td>1.0</td>
<td>1.0</td>
<td>8.9</td>
</tr>
<tr>
<td>C.P. &amp; M.R.</td>
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<td>3.5</td>
<td>1.0</td>
<td>4.4</td>
</tr>
<tr>
<td>C.P. &amp; P.S.</td>
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<td>2.2</td>
<td>2.2</td>
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<tr>
<td>C.P. &amp; E.D.</td>
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<td>4.4</td>
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<tr>
<td>A. &amp; M.R.</td>
<td>1.7</td>
<td></td>
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<tr>
<td>A. &amp; P.S.</td>
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<td>0.9</td>
<td>1.9</td>
<td>2.2</td>
</tr>
<tr>
<td>A. &amp; E.D.</td>
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<td>7.8</td>
<td>8.7</td>
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<tr>
<td>A. &amp; O.D.</td>
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<td>M.R. &amp; P.S.</td>
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<tr>
<td>M.R. &amp; E.D.</td>
<td>1.1</td>
<td>0.9</td>
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<tr>
<td>M.R. &amp; O.D.</td>
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<tr>
<td>Other</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4 Handicaps Total</td>
<td>1.6</td>
<td>4.3</td>
<td>7.9</td>
<td>3.8</td>
</tr>
<tr>
<td>5 or More Total</td>
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<td></td>
<td></td>
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<tr>
<td>Grand Total</td>
<td>6.5</td>
<td>33.0</td>
<td>67.8</td>
<td>53.8</td>
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</table>
These traits mentioned are general to etiology and not additional handicaps. The characteristics of these children are many and vary much in degree. Since no etiology greatly surpasses the others, all of these traits should be adequately accounted for in design.

The most important hinderances are related to their visual orientation and poor conceptualization. These include a poor memory, abnormal difficulty with language, poor abstract ability, and distractability. The least important are insomnia, poor coordination, poor vision, and abnormal behavior. Most of those that range in the middle are related to behavior and not physical hinderance.
# Traits vs. Etiology

<table>
<thead>
<tr>
<th>Trait</th>
<th>Hereditary Meningitis</th>
<th>Premature Rubella</th>
<th>RM factor</th>
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<tbody>
<tr>
<td>Poor memory</td>
<td>130</td>
<td>170</td>
<td>190</td>
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<tr>
<td>Abnormal difficulty with language</td>
<td>130</td>
<td>190</td>
<td>220</td>
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<tr>
<td>Rigidity &amp; perseveration</td>
<td>110</td>
<td>145</td>
<td>155</td>
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<tr>
<td>Discrepancy between I.Q. &amp; achievement</td>
<td>120</td>
<td>135</td>
<td>165</td>
</tr>
<tr>
<td>Poor abstract ability</td>
<td>128</td>
<td>165</td>
<td>200</td>
</tr>
<tr>
<td>Distractability</td>
<td>115</td>
<td>190</td>
<td>195</td>
</tr>
<tr>
<td>Poor writing &amp; drawing</td>
<td>114</td>
<td>150</td>
<td>155</td>
</tr>
<tr>
<td>Overattention to detail</td>
<td>104</td>
<td>120</td>
<td>145</td>
</tr>
<tr>
<td>Perceptual deficiency</td>
<td>103</td>
<td>140</td>
<td>145</td>
</tr>
<tr>
<td>Poor impulsive control</td>
<td>119</td>
<td>155</td>
<td>150</td>
</tr>
<tr>
<td>Emotional shallowness</td>
<td>102</td>
<td>135</td>
<td>140</td>
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<tr>
<td>Unstable emotionality</td>
<td>110</td>
<td>140</td>
<td>135</td>
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<tr>
<td>Egocentricity</td>
<td>115</td>
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<td>155</td>
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<tr>
<td>Stubbornness</td>
<td>125</td>
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<td>150</td>
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<tr>
<td>Excitability</td>
<td>115</td>
<td>155</td>
<td>160</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>105</td>
<td>145</td>
<td>155</td>
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<tr>
<td>Insomnia</td>
<td>115</td>
<td>135</td>
<td>115</td>
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<tr>
<td>Traits vs. Etiology (continued)</td>
<td>Hereditary Meningitis</td>
<td>Premature Rubella</td>
<td>RH factor</td>
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<tr>
<td>---------------------------------</td>
<td>----------------------</td>
<td>------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Poor coordination</td>
<td>105</td>
<td>100</td>
<td>130</td>
</tr>
<tr>
<td>Poor vision</td>
<td>100</td>
<td>100</td>
<td>115</td>
</tr>
<tr>
<td>Abnormal behavior</td>
<td>100</td>
<td>120</td>
<td>110</td>
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</table>
Vernon described his research as being one of three major works in this area of disabilities in the past ten or twenty years (Doctor, 1958; Myklebust, 1958; Vernon, 1961). "In spite of the concern and pressure for programs, very little is known about the nature of multiple handicaps of these children or about the factors that cause them." He considers his study as "brief background", therefore my particular design should be viewed as an experiment with the ability to control many major and minor architectural elements for various time periods. The intensity of involvement in a "custom" design should correlate with changeability.


2. Ibid. p. 24, 95.

3. Ibid. p. 71 - 87.

4. Ibid. p. 96.
is somewhat harder to measure, but no less important. I would prefer to provide a small controlled portion of windows.

Windowless classrooms would also decrease the noise filtration from outside which includes the playgrounds, and streets. One auditory design expert also pointed out that noise transmission between classrooms occurs mostly through the windows and not the walls. Some of these noise influences can be better applied in site design and not especially interior design. However, some control can be applied by offsetting of interior classroom entrances. Long tubular spaced classrooms must also be avoided. Flexible folding walls cannot really be considered effective in sound control.

Possibilities of a class grouping with another class should be considered. This may be within the home unit or the cluster of homes. In any case, the
compensation should be encouraged, but to depend heavily on this factor is very demanding and somewhat a romantic belief. Observation and research challenge the idea that the other senses become sharper.

lack of coordination
This problem can only be encountered by much practice and exercise. In this respect the therapy room and outside play areas should be heavily stressed. Perhaps the hallways and other common spaces can take a therapy role also. Exercise equipment should be fun and exciting.

lack of good mobility and orientation
Circulation must be simple and daily spaces must be easily accessible. Nearly all spaces should be simple and fixed (or fixed throughout the year). Stairs should be avoided as much as possible. Easy storage is necessary.
health hazards

Shattering glass, hot surfaces, jagged elements, and delicate fixtures should be avoided.

Mental Development

inability to imitate or represent

The accessibility through touch is very important in this comprehension. Field trips should also be encouraged.

Social Development

poor social contact

Socialization is fairly normal, though the integrating spaces should be easily accessible.

Emotional Development

hazard of overprotection

Excessive use of specialized treatment and equipment must be avoided. Simplicity of the surroundings may encourage independence.
Crippling Condition

Physical Development
lack of stimulation and coordination
See Visual Impairment section, 'Physical Development, lack of coordination'.
poor mobility
See Visual Impairment section, 'Physical Development, lack of good mobility and orientation'.
health hazards
See Visual Impairment section, 'Physical Development, health hazards'.
Mental Development
poor initial orientation
See Visual Impairment section, 'Physical Development, lack of good mobility and orientation'.
Otherwise, development is usually good.
Social and Emotional Development
withdrawal
Group interaction should be gradual and controlled,
but not especially forced. These spaces should be open though to discourage isolation. Fun and exciting equipment and toys may attract the child to group involvement. A variety of groupings involving size and familiarity should be possible.

hyperactivity

This is probably more a problem in physical development. This excessive energy must be controlled not punished. This may require an isolation space which may be temporary or fixed, small and enclosed, or large and open. Almost any space may be used for this purpose, but it should be a useful one.

need for responsibility

This is especially necessary for all children. Care of toys, pets, etc. establish a personal want for responsibility. The child must also be taught to clean his room, use the bathroom properly, and dress. Special attention can be given by
Emotional Disturbance and Social Maladjustment

Phyiscal Development

poor health standards

Development is normal, however, some researchers say there is a higher percentage of children from poor homes and poor health standards are prevalent. Whether this is true or not, all children should be taught proper standards of sanitation and cleanliness. Bathrooms and other services should be easily accessible. Bedrooms, etc., should be able to be cleaned by the children.

Social and Emotional Development withdrawal and hyperactivity

See the Croppling Condition section, 'Social and Emotional Development, withdrawal, hyperactivity'.

hostility

Violence and aggressiveness can result from many
influences. Perhaps the predominant ones involve alienation and a lack of identity. The mistake of most institutions is their indestructable nature. The child cannot affect it in any way. This may consider the child's physical well-being, but not his mental and emotional well-being. It is practical to use destructable building elements that are cheap and easily replaceable. Isolation spaces will undoubtedly also be necessary. need for responsibility

See the Crippling Condition section, 'Social and Emotional Development, need for responsibility'.

Physical Development

lack of good balance

This is hardly a strong common factor and does not justify physical design solutions beyond that of normal practice including the therapy room and play areas.
sensory compensation

See Visual Impairment section, 'Physical Development, dependence on remaining sight, sensory compensation'.

Mental Development

poor communication and conceptualization

Dr. Pourie Vaux Doctor outlined ten parts to teach communication to the deaf; speak the work, speechread the word, write in manuscript, read the printed word, write in cursive writing, spell manually, learn the sign, learn how the word sounds through a hearing aid, recognize a pictorial representation of the word, and identify the actual thing. These parts involve in physical design the control of light, noise, touch, and graphics. The latter control element involves a real and abstract representation. It should unify this teaching in subject matter and time. Graphics
also allow the extension of teaching beyond the classroom and class time. Graphics may emphasize time, place, and quantity. Speech development may be helped by good hearing aids, mirrors, and graphics (static and kinetic).

Social Development

lack of integration

A variety of contacts should be provided. Integrating spaces should be easily accessible. Emphasis may be best placed at the recreational level for integration.

The most demanding of these handicaps are the visual impairment and crippling condition. Actually the hearing impairment should demand no design variance from that which should be for normal children. Exceptions include hearing aid connections and fire alarms.

Portions of this section are summaries from chapters of the following book:
Virginia N. Axline indicates in her book, *Play Therapy*, the importance of play in diminishing emotional disturbances. The therapist is limited to a non-directive position relying on the child's creativity and feelings. While it is questionable how much these special deaf children can express themselves, play should still be considered more important than any other single device for improving emotional behavior, learning, socialization, physical ability, and independence. This development is usually associated with only constructive play. This may be very limiting though for improving the emotional behavior if the play does not also include a destructive nature.

Magruder Environmental Therapy Complex provides an excellent format through play for children with perceptual difficulties. This example is mentioned because it is one that can apply to other handicaps.
This unusual playground, based on the idea of play as a step to further learning, has an atmosphere that is attractive, colorful, and exciting. But these are not really as exceptional as its ability to use the entire body in an imaginative way to learn. They learn of such essentials as tactile awareness, body balance, motor planning, temporal awareness, spatial relationships, and kinesthetic awareness. Equally important is the ability to change the devices and design. The equipment used consists of modern materials such as foam. Lady Allen, in her book, *Planning For Play*, stresses the value of less formal equipment as compared to traditional metal frames, etc. The former type, consisting of mostly discarded manufactured products, provides a wider variety of experience and encourages creativity.

The danger of the equipment should definitely be
considered, but overprotection should be avoided. These children have very few injuries despite the dangerous nature and their little sense of personal danger.

This type of play equipment also allows the child to acquaint himself with technology and social functioning. The child learns the necessity of cooperation and responsibility. Play is also the tool that substantially equalizes all children for integration. Thus, the primary orientation of this facility to other spaces and facilities is to the play activities.

Richard Dattner summarizes these relationships in this statement: "The important thing is to provide a series of possible activities of varying complexity that allow the children to see the effect their actions can have on their environment."

Design Factors & Arrangement

A. 1. indoor space
   2. indoor-outdoor space
   3. outdoor space

B. 1. individual
   2. small group
   3. large group

C. 1. multiply handicapped deaf only
   2. m. h. d. & "normal" deaf
   3. m. h. d. & normal
   4. "normal" deaf only

D. 1. semi-passive (low noise level)
   2. semi active
   3. active (high noise level)

E. 1. much supervision (2 or more)
   2. medium supervision (1 constant)
   3. little supervision (1 tentative)

Learning

Relationship to other Activities

As indicated by the schedule outdoor play, indoor play, dining, television viewing, etc. are adjacent
in time to the classroom activities. These activities are also obviously overlapping in learning experiences.

Although I prefer to allow options in changeability, emphasis should be placed on relating the classroom to the other daily activity spaces. This has been done to the degree that most of the indoor activities are in one space, and very loosely defined, if at all.

This unification places certain demands on the usage of space. Perhaps some of these demands should be satisfied even without the space unification.

The most important demand is that of organization. From several observations of classrooms, the prominent characteristic seems to be the cluttering of the walls with pictures, writing, etc. This can be very stimulating visually, but mostly will only be confusing. The media, subject, etc. must
be organized while maintaining some variety. Much of the material usually displayed seems to have been forgotten and no longer serves a purpose.

Furniture must also be organized. This does not imply that some strong geometry must be applied in design. Furniture organization involves many factors other than arrangement; such as color, size, material, and design. Storage and availability is especially important to provide proper storage.

The unification of these activities may imply a space out of proportion in scale to these children. However with proper organization, this need not be necessary. Many of the classrooms I observed wasted a great deal of space. Often the seats were placed in the corner of the large space. The distance from the seats to walls could rival some hallways. Of course, some free space is required in front of the chalkboard, but the long length of
the chalkboard seemed unnecessary. Multi-leveled usage in furniture design should be considered by defining one level primarily for the children and one for the teacher. Usually we force the children to adapt totally to our level or to copies of our level. The former case is a very obvious mistake and has been corrected in most schools today. The latter case of copying is still strongly with us. Their chairs, tables, etc., are copies of ours. Some adults think it is necessary to prepare or discipline them for the adult real world. Perhaps this is important, but I don't believe there is any rush at their age. Adaptation to the child in furniture design may allow much decrease in the usual wasted space.

The openness of these activities demands flexibility of temporary isolated enclosure. This can be achieved to some degree by minor change in furniture arrangement. This specifically applies to the
teaching wall. Other possibilities are ceiling supported flexible walls. All of these techniques can be especially applied to the isolation of one disturbed or disturbing child. In this case the play enclosures would be useful. The idea of the space though is to make the child's time worthwhile and not punishing. I was encouraged by one example of a multiply handicapped deaf child at ISD who was isolated in the kitchen. She understood the purpose of this measure and made her time worthwhile.

There has been a tendency in the past few years to eliminate windows in classrooms due to outside distraction. This is especially an important factor with visually orientated children. Windowless classrooms also provide even lighting and controls glare allowing better lipreading. These are significant and easily measurable factors. However, behavior due to lack of outside association
Children: Problems and Reactions

Visual Impairment

Physical Development

dependence on remaining sight
Television, pictures, etc. must be placed at an appropriate height and length to be viewed. Graphics, etc., should be large and have bold colors. The philosophy that sight should be conserved in early childhood if failing, sensory compensation

Comprehension through touch demands accessibility of building elements; appropriate heights should be applied. These elements should have a variety of textures to establish familiarity and order in space. The temperature of these surfaces are very important also. Various smells from the facility should be discouraged. Sound is covered in the Hearing Impairment section. Sensory
grouping would occur in a space other than the normal classroom space. The grouping space for the cluster of homes should have easy outdoor access as well as indoor access. This space may also be considered useful for grouping a class of multiply-handicapped deaf with the "normal" deaf. Therefore, it should be fairly accessible from the interprimary unit. It is doubtful that large groups would be formed in these cluster spaces. These rooms have been designated by title of Classroom Commons.
sink, etc. This would also be very useful as a craftshop, again using multi-purpose space as an economy measure.
Institutions

Typical Characteristics

Elements to avoid:

oversimplification

hard definitions of containment

(lack of transitional spaces, etc.)
lack of personal character

(also, few personal possessions)
lack of good & varied relationships to occur without total self-initiative
lack of sensory stimulation

(visual, kinesthetic, and olfactory)
lack of flexibility
little use of double functioning elements
little full time use or optional time
use of spaces and equipment
rigid time schedule
emphasize of authority and social roles
improper scale
too much order or total lack of order
poor sound control
lack of good play areas & landscaping
(including interior)
relationship of spaces not clearly shown
little privacy and intimate spaces
lack of urban and neighborhood contact
lack of choice - one demanding way enforced

Elements to utilize
large group advantages of common services
security of environment
physical comfort

Cottage type

good cohesive social unit
allows a variety of groupings
isolation of separate units is poor
nature of the unit (being a small intimate group)
allows a conflict to arise with the child's
real home image
Corridor type

- good movement system
- good linkage system
- does not encourage social interaction
- acts as a barrier

Linked House type

- allows a wide variety of contacts
- allows a variety of groupings
- allows linkage
- danger of invading the private space

Total Design Concepts

Living, Learning & Therapy

Centralizing services

- separates living from learning
- separates living from therapy
- poor accessibility & time consuming
- does not allow maximum use of facilities
- allows variety of location
- allows groupings of classrooms
Individual therapy
combined living and therapy
separates living from learning
allows class groupings
poor class accessibility
difficult for the therapist
Total individualized services
combines living and learning
combines living and therapy
good accessibility
very isolated - discourages a variety of contacts and groupings
difficult for the therapist
allows maximum use of facilities
requires much duplication of equipment
Individual classrooms
combines living and learning
separates living from therapy
discourages class groupings
poor therapy accessibility
Institutions

Philosophy

Home and class grouping
combines living and learning
fair accessibility
allows class groupings
allows home groupings
encourages a variety of contacts
allows maximum use of facilities

An institution of this sort has the problem of satisfying the needs of the child in a manner that will never equal that of the home and normal living. Perhaps it is difficult to analyze existing facilities and to differentiate exactly the original philosophy from the expedient design. If we assume there is a general desire to create a home-like environment, then it is easier to see the degree of compromise. From this viewpoint many schools have abandoned much of the original
philosophy for probably cost savings. The building budget must be met one way or another. However, most methods used are very objectionable. Usually the original philosophy is forgotten and replaced by a design that develops an institutional depersonalizing living. The building functions better for custodians than the children. The individual child is sacrificed for groups of children who in turn are sacrificed for the administration.

Instead of implementing cost changes that greatly affect the philosophy, other changes should be made. For example, savings can result from multi-functioning spaces; increased efficiency of space usage involving storage and seating; and overall proportional reductions of area square footage of all rooms rather than elimination of rooms.

Total commitment to a home-like environment
surely is hiding the actual situation of an artificial environment. Children cannot be fooled into thinking this is just like home. The present home for the multiply-handicapped deaf children at I.S.D. avoids this dishonesty while still honestly achieving many home characteristics. The assumption that one could design the facility on the idea of simply duplicating the present home several times, disregards the fact that the total facility is a totally new problem. A facility of several homes involves many new varied relationships and services that never existed with just one home. For this basic reason the design pursued is not a series of separate cottages. Nor should the design surrender to that of a large dormitory situation. Instead, it should be homes that are interconnected with each other and with the services.
The initial design will incorporate preschool or primary ages and interprimary ages. Older age groups may be accompanied in a later addition.

There are two different variances with regard to age. The first is shift in age group's populations without a major overall population change. Minor shifts may be accounted for by slight increase in home ratio. Major shifts can be compensated for fairly easily if there are no major physical separations in home groupings changing the designated age for a home. This may be difficult depending on the satisfaction of site influences. If the shift is permanent and there are separations in age groups, then the home may be moved to the other group by using trailer modules or a similar device. Major permanent increases in age groups will demand the addition of other homes.
Sex variance can be accounted for by three methods. The number of variances will be matched by the scale of application of these methods. The first method is accomplished by rearrangement of bedrooms in a home complex to achieve a higher ratio. Second, the size of one bedroom complex would increase provided the other sex bedroom complex, of the same home, would decrease. Thus, there would be no actual increase in ratio. Third, the assignment of bedroom complexes to sex would shift to accommodate the change.

Variance of handicap groupings can be satisfied by designing for all handicaps. However, if conflicts are created or if one is too demanding and expensive, then special accommodations will be necessary. This may imply grouping according to handicap but that should be avoided as much as possible. Consideration will always be given to
the degree of occurrence of handicap as shown by the Vernon study.

This design factor must be accounted for in the bedroom complex, classroom, home location, and therapy rooms. The first case can be accomplished by the size of the bedroom and the number of children in the room: singles, doubles, etc. Accounting for variation of behavior in the classroom involves seating arrangement and isolation space possibilities.

A solution common to all of the variances mentioned previously is admissions screening, but I hope that the design would make such a device as needless as possible.

Of course, every child's behavior varies in compatibility with the normal deaf children. Therefore, not every home should be located near the interprimary unit. Therapy room design should have
Environmental Controls for the Child

Purpose

Control Elements

divisible spaces. Behavior is obviously the most difficult variance to design for due to our lack of knowledge as regards every individual child, the wide variation in behavior possible, and suddenness and temporariness of certain behaviors.

allow the child to make decisions
allow manipulation and control of his environment to suit his needs
allow freedom and individualism
allow individual progression
doors & space accessibility
bathroom facilities - toilet, bath, lavatory
window shades and curtains
light switches - dim to bright
supplies to clean rooms
play equipment
teaching equipment (partial restriction)
kitchenette (partial restriction)
desk, chair, etc.
personal possessions
clothes and dressing
Television, etc. (partial restriction)
free time
class time, etc. (partial restriction)
eating
contacts with other children
bedroom selection
circulation patterns
graphics - static and kinetic
furniture arrangement

Change and adaptation

Considering Toffler's Future Shock, man's inability to adapt to change is a main deterrent to his breakdown. This may be in the form of under or over stimulation.

Children can be very curious in this aspect.
tend to exaggerate many times the various sides of this adoption or lack of it.

They may be extremely able to adapt very quickly to an overall change. However, others may break down into withdrawal or hostility under the slightest degree of change.

The children concerned with this facility, due to their additional handicaps will generally have a lower adoption ability. Thus, an exaggeration of their reaction to change is very likely to be the case.

Adaption to change must be performed on a gradual basis with the choice of retreating to the previous stages. If this choice is not provided then the slightest next change would result in total rejection.

Lack of stimulating change would obviously result in stagnation and custodial care. Therefore, a lack of change would be pointless in order to avoid
the hazards of change.

The previous section labeled a variety of environmental elements the child can control. Usually we fail to realize how seriously the child feels about the elements he cannot control. This would involve a new location, building, authority, peer group, schedule, etc.

I hope through my particular design that a certain degree of control can be placed on those factors affected by the design in order to ease the amount of change and adaption. When habits are formed of some factors the child will be able to adapt to new ones.
In reference to these factors mentioned changeability may infer a rearrangement, turning on and off, closing and opening, or replacing. Changeability depends on the economics, labor, and equipment that is required for the changing to take place.
Basic schedule

6:30 rise, dress, clean
7:30 breakfast
8:00 prepare for class
3:30 class with therapy, indoor play and outdoor play
12:10 lunch, play indoor, outdoor
1:20 class with therapy, indoor play and outdoor play
2:45 free time including clubs, religious school, outdoor play, television, etc.
5:30 supper
6:00 inside or outside play
varies with inside play, television, etc.
3:00 prepare for bed
5:30 bedtime

This is a general schedule of the present pattern. Flexibility is allowed for the teacher and house parent during certain time periods. For example,
class may take the form of a visit to the store. I do not complain of what structure there is, because it may allow the child to orientate himself in time and increase his memory through time.

All possible furniture should be constructed by ISD graduates, summer help, and school term help, for the following reasons:

create an initial and continuing bond between the older normal deaf and the multiple handicapped deaf
provide a job, money, and experience for the ISD older teenagers
lower the cost of furniture
grant simplicity of furniture
allow more adaptibility of furniture to the home design – allow flexibility
always a future supply
easy repair allows more child manipulation
Bedroom Elements

modulated in depth, width, and length
wood construction

- lower bunk
- upper bunk
- ladder
- combined seating and storage
- storage unit

Living Room Elements

ISD constructed living room furniture would be preferred, but good used furniture would also be acceptable and still fairly inexpensive. Perhaps it would even be donated.

Classroom Elements

A teaching wall is proposed for the following reasons:

- organize equipment and materials
- control the visual and auditory stimulants
- allow flexibility of equipment
- use as constructive isolation
- space defining flexibility
Elements

- study carrels
- desk
- chair
- projector
- hearing aid connection
- isolation curtain
- computer - future

Application

This was derived from the success of placing desks against a wall for brain injured and hyperactive children in order to control the visual stimulants. Capsules were also used with partial success. Failures were due to the type of space rather than increased visual control. This is certainly worth trying, however, much consideration
should be given the visual sign communication.
With consideration to space as regards the number and familiarity of children and adults, space relationships is very important. There should be gradual changes in the factors as one moves through the spaces. If possible, the number should be controlled while the familiarity changes or vice versa. Major changes should be expressed architecturally. For example, the home consists of a small number of children all of whom are familiar with each other. The transition of the home to a space common to several homes should be indicated perhaps by graphics, texture change or an all glass wall. This may be treated as a bridge or fence or both. For example, the transition between the multiple handicapped deaf's outside play space and the normal deaf's outside play space may be indicated by the use of small shrubbery or mounds. These serve to define that space belonging primarily to home,
while it is also a device to attract both groups to a common element to share. Thus, the child does not need to depend on total self-initiative. I feel it is quite necessary to clearly define these transitions between complexes in order to structure the child's memory of location.

Circulation must be simple. This aspect of design must respect and understand the mental and visual ability of every child. The child must also be able to relate to the furthest services of the building. This relationship will probably increase with simpler circulation. However, to follow this idea thoroughly would undoubtedly result in a system that is also very boring to the child. It would be best to substitute for extreme simplicity certain techniques that encourage easy memorization of circulation. This would involve differentiation and identification of elements composing the immediate surroundings of these paths. For example,
Hall surfaces may be concrete in one area, followed by wood in another area and then carpet. Hall surface may be various colors and textures. Other techniques may include various spaces and lighting.

While any one path must be simple, the total circulation system must be complex due to the interconnections of the paths and the flexibility desired. Many institutions have only one hard circulation network. This destroys any variation in spatial relationships. A facility does not have the option of associating one activity with another activity.

Proper sequence, as regards progression for an area for the individual to one for a large group, can still exist with such flexibility. Order must also exist despite the simplicity or complexity.

An established sequence in circulation, despite the flexibility, becomes too demanding when the child does not have an option in paths to get somewhere. As John Holt points out, children find an
amusement from doing something the wrong way when
they clearly know the correct way. It also allows
a different view to understand the environment they
are in.

Groupings in Space

Bedroom Complex

- Bedroom
- Bathroom
- Hallway

- ONE CHILD
- ONE HOUSE PARENT
- ONE TEACHER

transition

Home Complex

- Living Room
- Kitchenette
- Classroom
- Indoor play
- Immediate play

transition
Commons

Large outside play
Hallway
Classroom commons
Physical therapy
Occupational therapy
Vocational training
Speech therapy

transition

Administration

Conference
Lounge
Restrooms
Offices
Waiting Room
Clinic
Observation
Phase One

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Custodial Room</td>
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<tr>
<td>Bath - House Parent</td>
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<tr>
<td>House Parent</td>
<td>120 (x)</td>
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<tr>
<td>Bedroom</td>
<td>120 (x)</td>
</tr>
<tr>
<td>Total (complex - total)</td>
<td>120 (x)</td>
</tr>
<tr>
<td>Kitchenette</td>
<td>320 (x)</td>
</tr>
<tr>
<td>Dining Room</td>
<td>170 (x)</td>
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Phase Two

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Quantity</th>
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</thead>
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<td>Play Outdoor Ground</td>
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<tr>
<td>Play Indoor</td>
<td>150 (x)</td>
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<tr>
<td>Classroom</td>
<td>120 (x)</td>
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<td>Classroom Commons</td>
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<tr>
<td>Physical Therapy</td>
<td>500 (x)</td>
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<tr>
<td>Occupational Therapy</td>
<td>600 (x)</td>
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<tr>
<td>Vocational Training</td>
<td>175 (x)</td>
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<tr>
<td>Speech Therapy</td>
<td>270 (x)</td>
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<tr>
<td>Observation (per home)</td>
<td>100 (x)</td>
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<tr>
<td>Office</td>
<td>200 (x)</td>
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<tr>
<td>Office</td>
<td>60 (x)</td>
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<tr>
<td>Offices</td>
<td>200 (x)</td>
</tr>
<tr>
<td>Conference</td>
<td>175 (x)</td>
</tr>
<tr>
<td>300 (x)</td>
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Space - Size and Growth
External Relationships

Nation

Immediate area of the nation

A few of the surrounding state's have some sort of facility for these children. This may be a specific facility and program or just a program. Therefore, this facility may work in cooperation with these other facilities in regards to program.

The I3D MHD facility may accept children from surrounding states with no facility or an over loaded facility. This is extremely optimistic because the governmental bureaucratic setup is very limiting and uncooporative.

Entire nation

This facility must meet IEP's requirements.

This facility may serve as a very important research center for the development of these children and to help educators and those in training.

Residential School Role

Due to the small number of children in regard to
the distribution factor day programs cannot be established for a long while if ever in this century.

It is doubtful if a local day program could meet the requirements of these children within an eight hour limit.

Children from all over the state would be accepted.

Weekends are free for children to go home. Right now anyone may go home at least every other weekend usually despite the location. This is done through the use of a bus.

Vocational Centers: Goodwill Industries, Inc.
Crossroads Rehabilitation, Inc.

A child may stay at the ISD facility and during portions of the day go to those vocational areas for training and working.

Or a child may live in Indianapolis and go to these vocational areas for job training and ISD for education.

If the ISD MWD facility later provides for older
children then the incorporation of a vocational therapy may be necessary. Then this facility will have to work in close relationship with the vocational centers.

Educational and Therapeutic Centers:

Noble Center II
Indiana School for the Blind

A child may stay at the ISD MHD facility for various activities and visit the other centers daily and/or weekly.

The above statement may also be reversed for the mentioned centers.

An exchange of records, equipment and/or teachers may take place.

Day School Role

A child may live in the Indianapolis area and attend the ISD MHD facility for educational, social, and other purposes excluding living. (Most educators would rather keep the children at all times for a
total program.)

General location
	north of interprimary unit
	east of interprimary unit

between the boys' dormitory and the interprimary unit

adjacent to the present m. h. house (or in place of)

southeast corner of campus

Interprimary unit connections

north side far west exit

north side far east exit

l. p. gymnasium east exit

continue south hall to the east side for connecting

connect to south side

Utility services

avoid building over tunnel or sewer
provide for close connections to sewer, water line, and hot water line
light pole system may need to be moved and perhaps replaced by integrating with the building possible use of tunnel connection for hot water line but not especially for circulation telephone system connection fairly flexible in location

Drives
use existing drives
develop the drive from Ralston to the activity building, then perhaps eliminate the segment of drive between the activity building and interprimary unit
use a separate drive from 42nd St.

Parking
provide parking at the present practice field develop parking just north of 42nd St. next to the primary unit
allow for parking just west of the stadium
string out parking along the drive in the northern portion of campus

Staff services
provide for fair accessibility to the main cafeteria, administration building, and to major central campus
provide for good intercampus communications (telephone, etc.)
provide for easy and quick accessibility to the infirmary
provide for easy access to the activity building for therapy

Dining service
 provision may be by vehicle from the main cafeteria to the parking lot or extended sidewalk service may be supplied from the cafeteria in the interprimary unit through a building connection may be incorporated into the initial design or a
later phase

Practice fields

may be relocated to just west of the stadium
maintain present location
ground may be sloped against the building for
spectators viewing (and play)

Stadium path

directness may be altered to some degree
provide a ramp over the building or sink the path
(use ramp for play, esp. wheelchair play)
do not block the viewing of facility from the path

Outside play (i.p. & p. with m.h.)
differentiate and connect by mounds, shrubbery,
play equipment, etc.
use of tile, wood, concrete, etc. for play after
rain or snow

Ground levels and connection
one story ground level, direct access
one story ground level, partial built up