Children do not have USB ports

All learning is sensory. Information can only reach the brain through the senses.
Case Study – Central Institute for the Deaf School

Design Strategies for a Quiet School
45 - 53 dBA
74 - 78 dBA
62 - 65 dBA
55 - 57 dBA
Mass of school buffers street noise and defines street edge

School building is pushed back from highway

New school construction sited away from existing school, adjacent to residence

Research/support building located central to campus

Hillside, garden wall block highway noise from school yard
Overall Design Strategy

Identify, Prioritize Sources of Noise
Building System Noise & Distraction
1.1 machine noise
Central core buffers classrooms

Rooftop mechanical units located over storage and restrooms

1.4 zoning mechanical systems
Base isolators dampen vibration of rooftop equipment. Eight inches of rigid foam insulation on concrete slab.

Heavy concrete walls and slab reflect noise and deaden vibration.

1.1 machine noise
1.1 machine noise
1.2 system noise
1.3 infiltration noise
Delaware School for the Deaf

1.4 zoning mechanical systems
1.4 lighting and daylight distribution
Outside Noise
2.1 survey of background noise and sources
2.2 exterior wall construction
2.2 exterior wall construction
2.2 exterior wall construction

- Clay tile roof
- 3/4” Plywood
- 3” Rigid insulation
- Metal deck
- Acoustical window
- 3 1/2” Brick veneer
- 2” Air
- 1/2” Sheathing
- 6” Metal stud walls
- R-13 Batt insulation
- 5/8” Gyp. board
- 6” Metal stud
- R-13 Insulation
- Acoustical ceiling
- 1/2” Sheathing w/ building paper
- 2” Air
- Masonry veneer
2.3 window construction
Building Noise
3.1 zoning concepts for shared spaces
Gym noise contained by concrete walls and surrounding corridors

3.1 zoning concepts for shared spaces
3.2 acoustical separation
3.2 acoustical separation

- 7 1/4" Sound wall to deck above - sealed at top
- 6" Metal stud
- 2" Sound insulation
- 5/8" Gyp. board
- Air space
- 1/2" Resilient channels
- 5/8" Gyp. board
- Solid core wood door
Room Noise
Bay window seat adds to room shape

Highly absorptive ceiling

Carpet

Open front shelving reduces reverberation

2” Thick fabric-wrapped acoustical wall panels

4.2 finishes for reverberation control
Outcome
In 1999, construction was completed on CID School at a cost of approximately $135/GSF, well within the cost range of ‘typical’ schools built in the same market.

Classroom background noise levels tested below the NC 20 threshold, and significantly outperformed NC 20 in higher frequencies, which are more critical to speech intelligibility.

Reverberation time was recorded at an amazingly low 0.2 seconds.