



Miory Kanashiro
Lighting/Electrical

Rosegarden Branch Library, San Jose, CA
Spring 2004

Children's Computer Area

Purpose of Space

This area holds several VDT screens where children can research on the computers, find books, play games or use it for projects. It is also a space where people can read, write or draw.

At the end of the computer area, there is also a corridor that leads to the family area, bookshelves and storytelling area. Although this area is mainly designed for VDT use, there are other activities which can be performed as well. For example reading magazines, since the magazine rack is next to it on the eastern wall.

Lighting Concept

This area has mostly light fixtures with linear fluorescent lamps and compact fluorescent ones that provide an energy efficient design. One of these fixtures is recessed in order to provide light on the art work on the wall. Then on either side of the dropped ceiling be pendants and will provide an attractive look to the section. The main idea behind this area is to create a calm and relaxing atmosphere where kids can come in and work on their projects or just look for information on the computers. It is a pretty open space since it is connected to the circulation area as well and leads to the internet café behind it. This area has the same colors as mentioned before in the color psychology. Light blue and yellow. These create a good atmosphere filled with peacefulness with a touch of vivacity with the help of the LEDs which are located over the dropped ceiling creating a sense of continuity and motion since the color keeps changing over time.

Dimensions

This area is located on the north east area of the second level of the library. It is rectangular-like area which has access to the internet café and the circulation area.

Perimeter 97' -10" approx

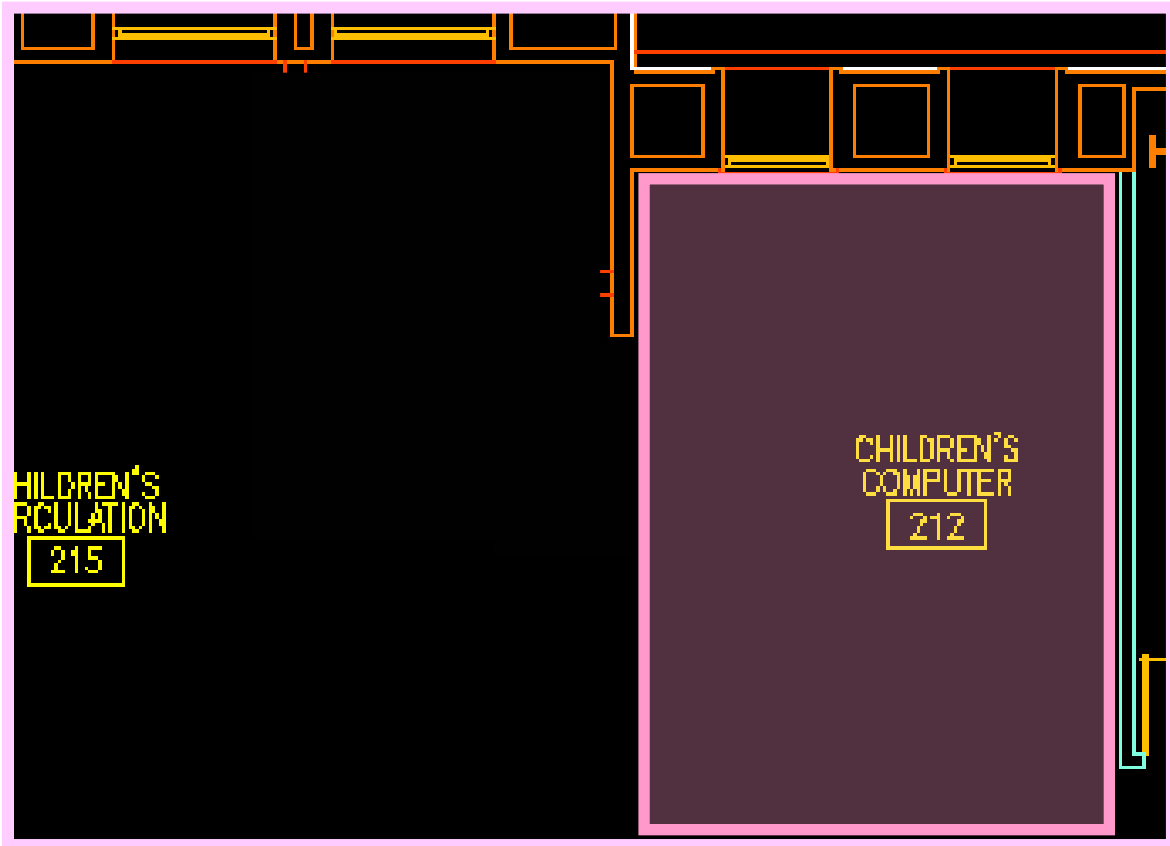
Area: 578.4 sqft

Floor Plan



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Finishes

The finishes in the interior of the building, specifically in the computer area of the library are these:

	Code	Material	Manufacturer	color
Floor	R7	Rubber floor	Atmosphese	
	B1	Base		
		Carpet		Diff size circles
Walls	P1	Plastic laminate	Wilson art	9711-60 manitoba maple
	P10	Paint	Benjamin Moore	2004-10 Deep rose eggshell finish
Ceiling	SL2	Slatwall	Display warehouse	To match wall color
	AC5	Gypsum board		
	AC6	Suspended grid and lay-in tile	Armstrong	



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Furnishings

The computer area has desks that hold VDT screens on them and chairs to go with them. There are also a couple of shelves along the walls to hold magazines and newspapers, but other than that, it will probably have no more furniture since the main purpose of the space is to hold VDTs. There might also be artwork on the walls, so there should be adequate lighting for that.

Daylighting

There are three windows on the north side of the building that provide light during the day in the computer room area.

Lighting Controls

The control device used in the children's computer area of the library was the manual on/sched off (8am-10pm) type and it uses a time switch with manual switch override.

IES Criteria

Reading - Data Processing Tasks - VDT screens:

Appearance of Space and Luminaires

Important

Space should have a uniform appearance, which will look orderly. It should have a relaxing feel to it. Children need to feel comfortable in this space. It needs to have an original look, in order for kids to be able to come in and not feel uncomfortable or uptight in it. Since most computer rooms are always bland, boring and cold, this particular one should be different, it should have a pleasant feel to it, where kids won't mind going to and learning new things, or looking for information at.

Daylighting Integration and Control

Important

Blinds or shades on windows should be used in order to control the glare and thermal discomfort from the sun and sky. High reflectance walls would be an option in order to reduce the contrast between the brightness coming in from the windows and the brightness from the walls.

Direct Glare

Very important

Direct glare in this space should be reduced to provide visual comfort and improved visibility of books, VDT screens and related tasks. If these tasks should be



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performed over extended periods of time direct glare may cause distraction and discomfort to the patrons.

Light Distribution on Surfaces

Important

Light distribution on surfaces such as VDT screens should be kept uniform in order to achieve visual comfort. Distribution on walls, ceilings and floor should be constant as well, but at the same time creating visual interest, possibly using more than one kind of fixture, which is achieved in this area. Too many different kinds of luminaires on the other hand would create shadows and irregular intensities on surfaces. So a balance of uniformity and pleasant appearance should be accomplished.

Light distribution on Task Plane (Uniformity)

Very important

There should be a uniform distribution of light on the task plane in order to achieve comfort while in the children's computer room. This can be achieved by spacing the luminaires so that the illuminance pattern on the workplane is within the recommended uniformity range. Indirect or indirect/direct light fixtures would also help with a uniform light distribution. Should avoid luminaires that form light patterns on the walls. Luminance between the workplane and the other surfaces in the area should not have too much contrast as well.

Luminance of Room Surfaces

Important

The reflectance on the surfaces such as walls, ceiling and floor should be pretty high in order to increase interreflections and reduce the contrast of luminaires against their background. This would also help with amount of energy used since less luminaires and less wattage are used. Should try to avoid excessive brightness or visible shadows on task surfaces as well as on walls and ceiling in order to produce a visually appealing area. Walls should have about 50% to 70% reflectance and ceilings from 75% to 90%.

Reflected Glare

Very important

The computer lab should have lighting that will minimize the reflected glare from the VDT screens in order to provide a more comfortable environment for the patrons. In order to achieve the usage of computer screens with diffused finishes, anti-reflection coatings and high background luminance would be ideal to lessen eye discomfort while performing tasks such as reading, writing, typing and drawing. These VDT screens should also face away from the windows to avoid the glare.

Shadows

Important

Shadows on work surface or patron's faces created by the luminaires would be a distraction and an annoyance for the patrons, so luminaires should be chosen carefully in order to avoid this.



System Control and Flexibility

Important

Since different types of tasks require different illuminance levels, make sure the area with VDT screens has appropriate lighting and the hallways part of the computer area has lighting appropriate for walking and accessing other areas of the library. Different light levels could also be achieved by using two separate circuits. Dimming is also another possibility in order to provide a different effect.

Horizontal Illuminance

Important: Horizontal 30 lux (3fc)

People need to be able to see what they are reading or writing on the task planes.

Vertical Illuminance

Very important: Vertical 30 lux (3fc)

Patrons in the library need to be able to read a book held vertically or placed on a horizontal surface. Correct illumination on computer surfaces is also critical, that is why vertical illuminance in this area is important.

Power Density

the allowable power density for a library with stacks is 1.2 W/sf according to Title 24

Luminaire Schedule							
Fixture	Description	Lamp	Ballast		Input Watts	Total No Used	Watts
Ceiling Washlight	Wallwasher	One CFM 42W GX24q-4, 3500K CCT, 82 CRI, 3200 lumen	Smartmate Programmed Start 4-pin Triple Tube [CFTR42W/GX24q]		46	1	46
icove12	color LED	12' LED (15 LED's in red, green and blue= 45 total)	-		6	36	216



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Pendant -T8	Indirect/direct standard T8 lamp, 2.25" X 48" fixture	28W, 4' T8 OCTRON ECOLOGIC fluorescent lamp [Sylvania], 4100K color temperature, rare earth phosphor, 82 CRI, 2725 lumen	High frequency normal light output electronic ballast for 32W T8 lamp, packaged 20 pieces per case - Sylvania		96	8	768
Total Watts							1030

	Dim (in ft)
Height	15.5
Length	27.8
Width	20.8

Area: (sq. ft.)= 578.24 sqft

**Power
Density** (lm/sq.
ft.) **1.781**

Lightscape rendering



The LED lighting above the suspended ceiling can be appreciated in this picture.

Fixture schedule



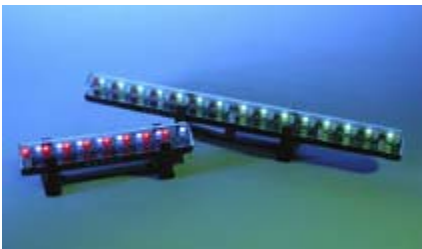
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Downlight and uplight are isolated from each other and controlled separately

Description	Indirect/direct pendant -Provides 20% - 30% downlight for task lighting where needed. - Litecontrol
Fixture Code	D
Mounting	Pendant
Lamp Watts	3 lamp, 26 watts
Lamp Type	Octron FO28/800XP/SS/ECO
Ballasts	2 lamp electronic ballast, high power factor. 1 lamp electronic ballast, high power factor.
Volts	120

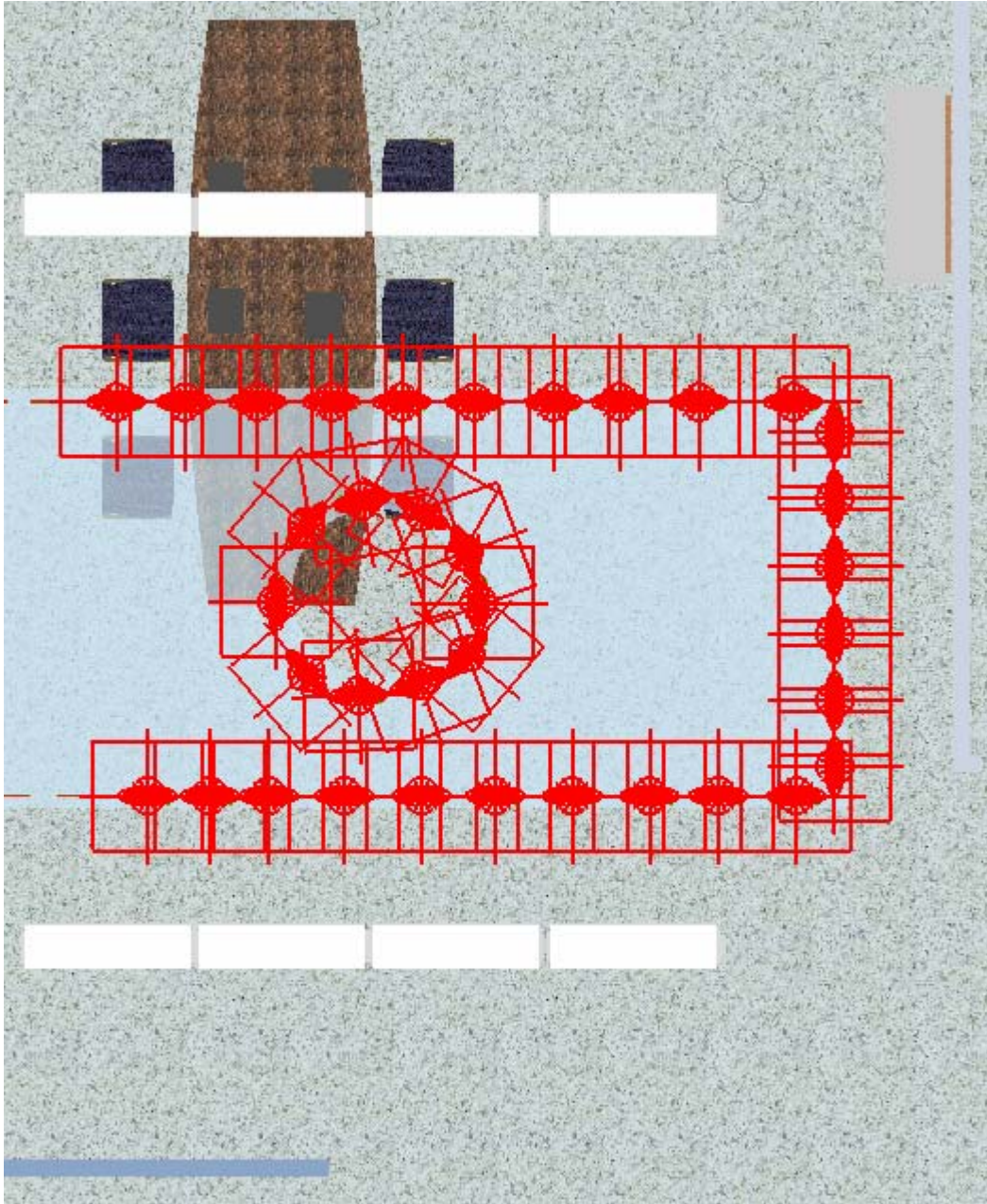


Description	12" color cove LED's – two piece vented plastic – 45 LED's (15 red, 15 green, 15 blue) with asymmetric direct illumination – Color Kinetics
CCT	1,000-10,000 K
Fixture Code	C
Mounting	On dropped ceiling (surface)
Power Consumption	Max 6 Watts
Lamp Type	LED
Controls	DMX 512 and iPlayer 2.0
Volts	120



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Description	5" Washlight - ERCO
Fixture Code	A
Mounting	Pendant
Lamp Watts	1 lamp, 42 watts
Lamp Type	One CFM 42W GX24q-4, 3500K CCT, 82 CRI, 3200 lumen
Ballast	(1) 1 lamp electronic ballast, high power factor.
Volts	120



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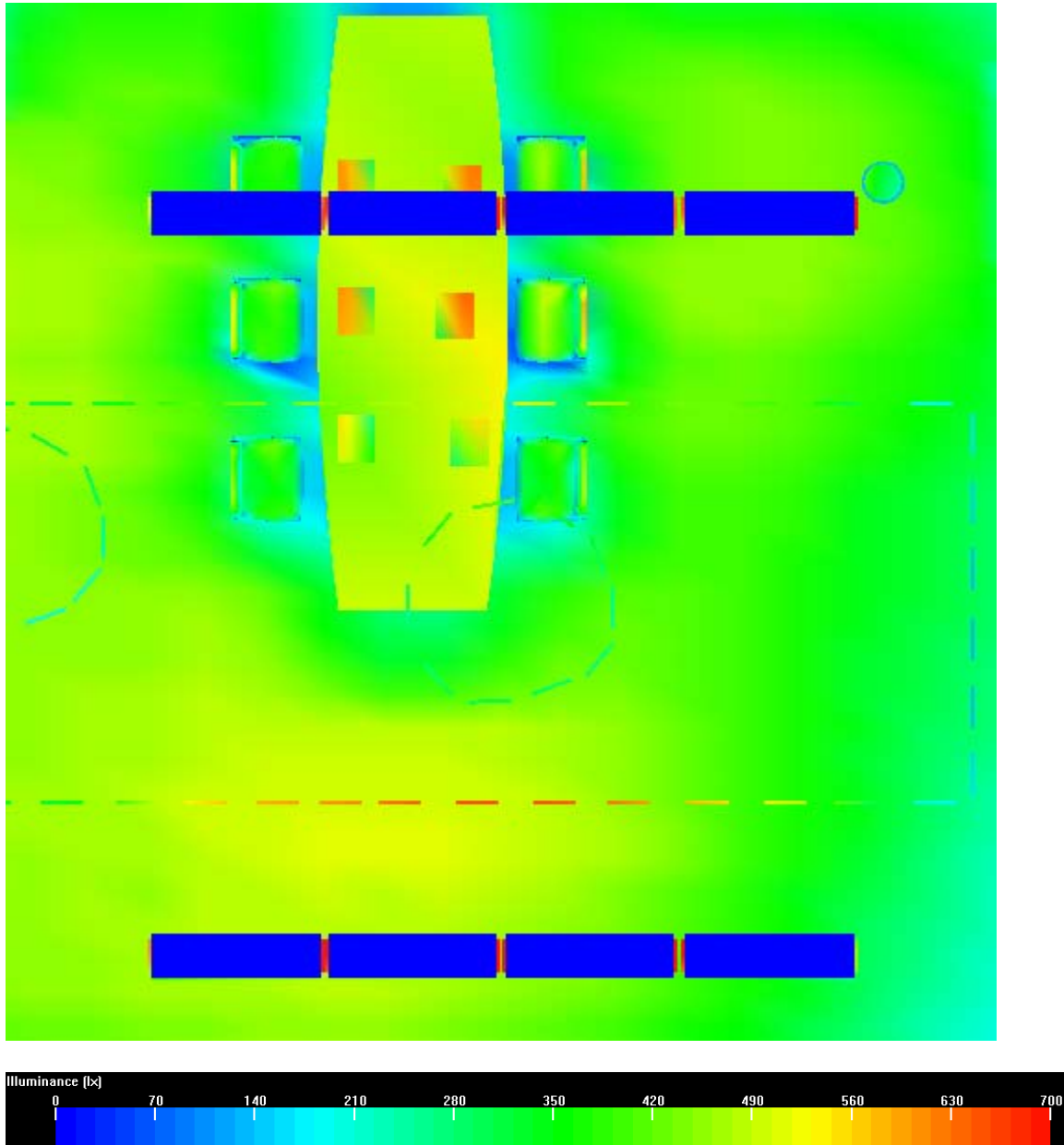
Lightscape Rendering





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Conclusions

The illuminance is pretty even on the floor as well as on the task areas. The illuminance values are a bit bright, but this may be due to the lamps used. The power density was brighter than the one allowed by Title 24, but since there is lighting for wall artwork, that



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would make the allowable power density higher by 0.35 W/sqft. Although the energy was not conserved that well in this space, it is aesthetically pleasing. This area also has controls which help with the color changing of the LED's located above the dropped ceiling as shown in the circulation area section.