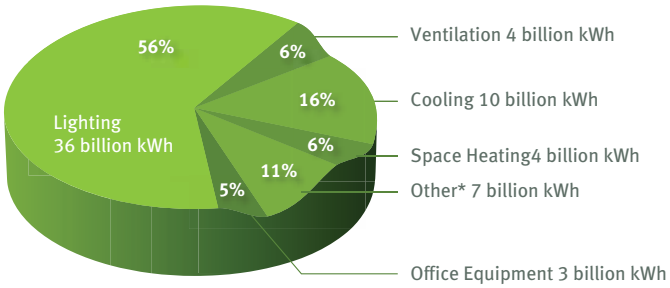
Edulumen™ Educational Lighting
by Metalumen

Metalumen
Ideas brought to light

Edulumen gets top marks for:

- Providing quality lighting to enhance uniform illumination while reducing glare and dark areas.
- Meeting the specified foot candle requirement as outlined by the Illuminating Engineering Society (IES) and the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), while reducing the application energy consumption.
- Providing control and flexibility for different teaching applications.
- Integrating with the natural daylight.

SITE ELECTRICITY USE IN EDUCATION BUILDINGS
65 billion kWh



* Other includes miscellaneous uses (2 billion kWh, water heating (2 billion kWh), refrigeration (2 billion kWh), and cooking(1 billion kWh).

Note: Due to rounding, individual figures may not sum to totals. Source: Energy Information on Administration.

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Illuminating ENGINEERING SOCIETY
Sustaining Member

Contents

metalumen Green

metaG

This new logo has been created to identify Metalumen fixtures that meet and surpass 85% efficiency and help achieve power requirements specified by ASHRAE.

Lighting design that integrates controls is essential in providing a superior educational lighting solution. Only controls can be specifically adjusted automatically or at will to improve the educational experience.

Lighting controls can provide up to 40% energy savings when integrated properly into classroom lighting solutions. Switching and Dimming can reduce energy consumption by as much as 40% while Occupancy and Daylighting controls can contribute another 20% in reductions each.

Lighting controls combined with highly efficient luminaires provide an ideal formula for energy management.

$$\frac{\text{Efficiency + Control}}{\text{Performance x Sustainability}} = \text{A+}$$

CONTROL OPTIONS -SWITCHING, DIMMING AND DAY-LIGHTING

Academic	■	●	●
Planar	■	●	●
Boxer	■	●	●
Serca	■	●	●
Orbit	■	●	●
Commons	■	●	●
Flex	■		
Estudio	□		
Activo	□		
AW7	□		

■ Switching/ Dimming

□ Switching

● Daylight Occupancy sensor

● Integrated controls

The above chart identifies the available controls that integrate seamlessly into each of the luminaires in our Edulumen program. These coded color keys are referenced throughout this brochure.

Boxer – All lamps on full brightness

Boxer – AV mode / Dimmed 50%

SWITCHING

Up to 40% lighting energy savings

Wall Switches with simple on/off mode or with occupancy sensors available in Passive Infrared, Dual and Ultrasonic technologies.

DAYLIGHTING

Up to 20% lighting energy savings

Day light occupancy sensors that turn lighting on and off automatically based on occupancy. The models are slim, low-profile devices designed for installation to the bottom of the luminaire bodies.

OCCUPANCY

Up to 20% lighting energy savings

Low Voltage Passive Infrared (PIR) Fixture Sensor controls lighting based on occupancy. A modular plug-in system utilizes an RJ45 connector on a low-voltage 6-ft. cord for installation flexibility, and to quickly link to a remote-mounted power pack.

DIMMING

Dimming lights by 50% = up to 40% lighting savings
(uses only 60% of the energy required)

Full system control with dimming ballasts.

Facility Integration.

Students challenge themselves throughout the day to achieve – and Metalumen is dedicated to this by creating sustainable environments that foster enhanced educational experiences.

A balanced scorecard is the Edulumen goal. Educational facilities utilize all of their spaces, each part of the room is "learning enabled" requiring specific characteristics to be addressed:

– Visual comfort
– Uniformity
– Task optimiztion
– Controlability
– Energy management

Lecture Hall Tables Provided by In2design Solutions Inc. ›

In any educational facility, lighting is an important consideration that requires the elements of light quality, reduced energy consumption and environmental controls to form a premium interaction with the room requirements.

Edulumen is a collection of premium luminaires that maximize both the functionality and performance of any educational facility. Based on maximum efficiency, integration of controls and exceptional design, Edulumen will earn high marks for meeting your requirements.

ORBIT

Classroom | Office | Commons

FEATURES	BENEFITS
Choice of 4 optical controls	Complement the lighting environment with performance optics.
T8/T5/T5HO	Flexible to accommodate multiple lighting levels within the same space, with the same luminaire.
Provisions for sensors	Occupancy and daylight sensors improve energy reduction and are compliant with LEED requirements.
Affordable elegance	Precision-formed 22 gauge steel bodies with die cast end-caps allow optimal performance without a premium price-point.
Installation and Maintenance friendly	Metalumen's electrical mechanical interlock makes installation simple through an innovative "plug and play" fixture connectivity system. Snap-in dust covers keeps fixtures and lamps clean.
Optimized reflective materials	Using precision reflectors allows for superior efficiencies of luminous performance and ensure MetaG ratings as high as 93%.

FEATURES	BENEFITS
Versatility and value	Available in 1 / 2 / 3 / 4 lamps utilizing T8, T5 or T5HO lamp technology.
Superior performance	Delivers lighting efficiencies of up to 92%; lighting distributions: Direct, up to 30%; Indirect up to 70% without supplementary reflectors. Variable distribution 94% direct, 6% indirect.
Classic academic design	An “old school” baffle fixture classically designed and updated to create a modern architectural direct/indirect luminaire.
Modular design	Exact 4 foot module allows for any 4, 8 and 12 foot fixtures to be placed in continuous runs.
Optional variable top reflector	Provides field-adjustable distribution: Direct (94-70%), Indirect (6-30%).
Optimized design	Luminaires combining superior construction, advanced optics and efficient glare controls excel in educational applications. Academic features all three of these criteria while also exceeding our minimum MetaG rating criteria.

Classrooms require specific lighting characteristics to achieve the highest grades as an environment for learning. Topping the list of design criteria are features including teacher controls, luminous uniformity and energy performance. Just as important are:

- Cost-effectiveness
- Energy efficiency and sustainability
- Flexibility of controls
- Quality of light
- Ease of installation and maintenance

Classrooms are unique interactive environments requiring performance and aesthetics in lighting to compliment the space through light and design. Architecturally, simplicity is preferred. Simple shapes with superior performance is ultimately desired.

The Edulumen Planar luminaire features a slim profile. While the over-all body height is 2.2 inches [55mm] the actual profile edge is viewed at 3/4 inches [20mm] making this luminaire less obtrusive when suspended. This quality luminaire delivers efficiencies up to 92% and it is accommodating to all the needs of the educational facility.

FEATURES	BENEFITS
Superior lighting performance	Lighting efficiencies of up to 92%, complementing all educational environments.
Up to 3 T5/T5HO lamps (2) T8	Flexible to accommodate multiple lighting levels within the same space, with the same luminaire.
Value construction	Die formed steel construction provides quality performance in a lower cost fixture.
Flexible design	Luminaires can be singularly mounted or placed in continuous rows. Also available is a wall mount luminaire for complementary lighting.

FEATURES	BENEFITS
Choice of 6 optical controls	Complements the lighting environment with performance optics.
Up to 3 T8/T5/T5HO lamps	Flexible to accommodate multiple lighting levels within the same space with the same luminaire.
Provisions for sensors	Improved energy reduction and compliance with LEED requirements, when using occupancy and daylight sensors.
Modular design	Exact 4 foot module allows for any 4 and 8 foot fixtures to be placed in continuous runs.
Optional variable top reflector	Provides field adjustable direct and indirect distributions to support specific room requirements.
Optimized reflective materials	Using precision reflectors, allows for superior luminous performance efficiencies, ensuring MetaG ratings up to 92%.
Maintenance friendly	Easy re-lamping from the top of unit plus optional snap in dust covers on select models to keep fixtures and lamps clean.

Lighting systems easily comprise the largest portion of a school's electrical energy use. Educational "energy footprints" can be measured and minimized while maintaining superior illuminated environments.

Traditionally, classroom illumination has been measured by the quantity of light. But today, the focus is on quality to best gauge student need and an optimal learning environment. Factors such as visual acuity, comfort, glare and direct/indirect lighting play an essential role in the preparation of the classroom. No longer does energy consumption have to be a trade-off for high lumen classrooms.

The specific controls recommended for the majority of educational environments include:

- Dimming and switching
- Daylight harvesting
- Occupancy sensing

When integrated properly, these controls provide positive benefits toward energy reduction, student comfort and improved learning. With ever increasing student interface opportunities, the need for greater controls is essential.

FEATURES	BENEFITS
Choice of 4 optical controls	Complements the lighting environment with performance optics.
Up to 3 T8/T5/T5HO lamps	Flexible to accommodate multiple lighting levels within the same space with the same luminaire.
Provisions for sensors	Improved energy reduction and compliance with LEED requirements, when using occupancy and daylight sensors.
Modular design	Exact 4 foot module allows for any 4 and 8 foot fixtures to be placed in continuous runs.
Optimized reflective materials	Using precision reflectors allows for superior luminous performance efficiencies, ensuring MetaG ratings up to 95%.
Maintenance friendly	Easy re-lamping from the top of unit plus optional snap in dust covers on select models to keep fixtures and lamps clean.

Each different interface requires a unique lighting solution. Providing lighting control to teachers and students empowers them to better decipher and understand the information being presented. Flexibility of controls improves performance and makes the facility more “learning friendly”.

FEATURES	BENEFITS
Volumetric lighting	Provides uniform illumination and consistent light levels for relaxed learning environments.
Minimal mechanical interference	Fits easily as a retrofit or new installation fixture.
Contemporary luminaire	Uses unique lens technologies and features modern lamp/ballast combinations for superior look and performance.
Dual size	Based on a standard 2 foot or 4 foot grid, Commons fits perfectly into standard applications.

FEATURES	BENEFITS
Uniform luminous board wash	Provides uniform direct light in precise locations.
Single lamp Asymetric reflector	Directs light to where it is needed.
Simple design	Designed to integrate into any educational facility, this 4 inch square luminaire performs with minimal intrusion within the room.
Optimized reflective materials	Precision reflectors allow for effective illumination, all in support of energy efficiency.

Classroom lighting supplements the teaching environment by illuminating any type of teacher/student interaction. The flexibility of the lighting systems must support a variety of different applications within the room. Students typically collect information through:

- Direct teacher interaction
- Blackboard
- Whiteboard
- Smartboard
- Computer or laptop screens
- LED or PLASMA screens
- Video projection
- Video conferencing

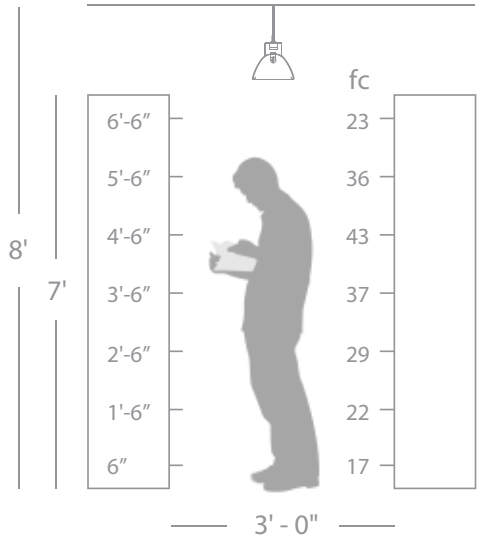
Both vertical and horizontal light are of premium importance in library and reference applications. The ability to discover must be supported through optimal light management.

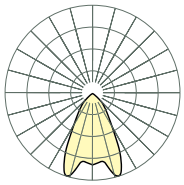
Estudio produces optimal light for these environments in two specific ways:

- Horizontal —provides efficient illumination for searching, reading and reviewing.
- Vertical —provides superior illumination from floor to top of stack and enables effective searching and reading of information.

The architectural evolution of the library has produced environments that are open and natural. Lighting requirements are driven by simple requirements:

- Sufficient light both horizontally and vertically
- Aesthetic, non intrusive fixtures
- Easy to maintain
- The Edulumen solution – Estudio — is a truly superior lighting product that gets top grades in all the essential areas.





Estudio C9A Series with 1 T5 lamp provides 31 Fc average on floor between stacks and 25 fc average vertically. Stack area 16' wide x 7' high.

FEATURES	BENEFITS
Optimal luminous distribution	Designed to illuminate a specific educational application, this luminaire provides uniform vertical and horizontal light for searching and reading tasks.
Single lamp reflector	This digitally designed reflector directs the light to provide ideal fc levels to the necessary areas.
Elegant, affordable design	Simplicity of design and controls makes the Estudio luminaire a simple choice. Estudio is a great example of "form supported by function".
Energy efficient performance	Estudio utilizes a single lamp to provide ideal illumination – this single lamp/ballast combination makes this luminaire extremely energy efficient.

LIGHTING RETROFIT (Fig. 1)

CO2 Reduction:	**Electrical Reduction:**
617.1 Tonnes Equivalent to removing 310 cars from the road per year.	882,000 KWh per year

Lighting performance is measured in terms of footcandles vs kilowatts consumed, however there is another metric being measured and that is carbon emissions. This new metric allows us to see analogous results to our lighting installations and the effects we create. Figure 1 shows the savings our Estudio installation creates annually in this University library – this certainly teaches a great lesson.

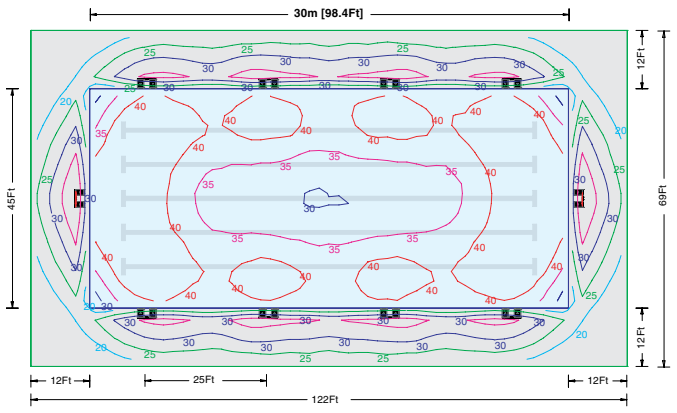
Most gymnasiums — both newly built and retrofit — are multi-function spaces requiring luminaires that effectively support this. Important considerations also include safety factors relating to the quality of illumination and the possibility of impact from equipment. Facility size also makes energy efficiency and a lower energy footprint important components.

FEATURES	BENEFITS
Uniformity	Supports both participants and observers with a uniform lighting solution.
Affordable durability	Featuring die formed steel construction, these luminaires feature quality performance in a quality made fixture.
Energy efficient	Provides high lumens per watt.
Optimal performance	Superior reflective materials supporting superior luminous efficacy.

FEATURES	BENEFITS
Multiple lighting optics	Illumination flexibility of up/down & single, through quad luminaire arrangements.
Peripheral mount	Designed to be mounted over the pool deck ensures ease of installation and maintenance.
Exceptional durability	Corrosion resistant with sealed access points for longevity and performance.
Daylight focused	Luminaire optics are optimized for 250W and 400W PULSE START mogul base ED-28/BT-28 clear metal halide lamps that more closely approximate the color temperature of natural daylight.
Superior construction	Fabricated aluminum 14 gauge seam welded housing assembly with aluminum one piece gasketed door frame.
IES Class III and IES Class IV	Designed to blend, function and perform harmoniously in recreational natatoriums and indoor pools with waterparks.

The AW7 Series is a clean and simple HID general lighting luminaire designed to blend, function and perform harmoniously in recreational natatoriums and indoor pools with waterparks; IES Class III and IES Class IV.

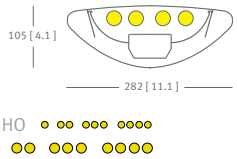
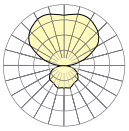
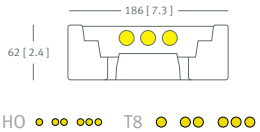
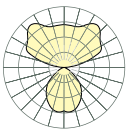
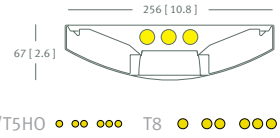
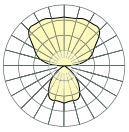
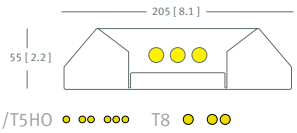
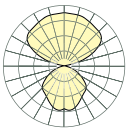
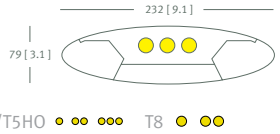
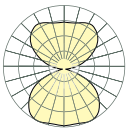
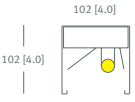
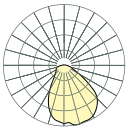
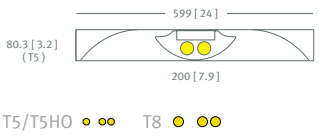
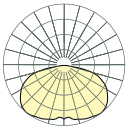
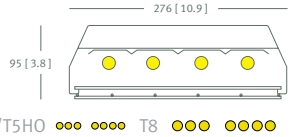
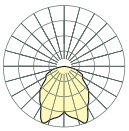
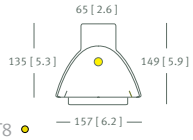
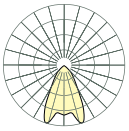
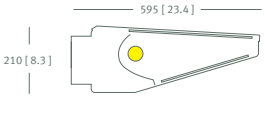
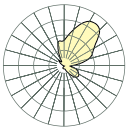
Making the right decisions on pool lighting design can be difficult. For this reason, the AW7 Series offers the lighting designer a unique array of lighting optics and mounting options that can accommodate required light levels, illuminate safe walking areas and provide easy maintenance.



Six lane, 30m pool illuminated with AW7-400w MH providing semi-direct - Class III distribution.

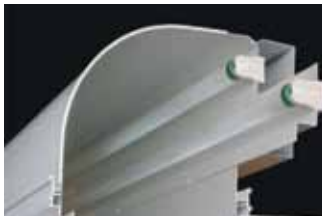
PRODUCT SUMMARY AND APPLICATIONS

EDULUMEN FIXTURES

Product	Applications	Cross Section	Distribution
 ■ **ACADEMIC | P,S, W** Page 6	☐ Dormitory ☐ Library ■ Classroom ☐ Recreational ■ Commons ☐ Board		
 ■ **BOXER | P, W** Page 8	☐ Dormitory ☐ Library ■ Classroom ☐ Recreational ■ Commons ☐ Board		
 ■ **SERCA | P, W** Page 9	☐ Dormitory ☐ Library ■ Classroom ☐ Recreational ■ Commons ☐ Board		
 ■ **PLANAR | P, W** Page 7	☐ Dormitory ☐ Library ■ Classroom ☐ Recreational ■ Commons ☐ Board		
 ■ **ORBIT | P** Page 4-5	☐ Dormitory ☐ Library ■ Classroom ☐ Recreational ■ Commons ☐ Board		
 ■ **FLEX | P** Page 11	☐ Dormitory ☐ Library ☐ Classroom ☐ Recreational ☐ Commons ■ Board		
 ■ **COMMONS | R** Page 10	■ Dormitory ■ Library ■ Classroom ☐ Recreational ■ Commons ☐ Board		
 ■ **ACTIVO | P, S** Page 14	☐ Dormitory ☐ Library ☐ Classroom ■ Recreational ☐ Commons ☐ Board		
 ■ **ESTUDIO | P, W** Page 12	☐ Dormitory ■ Library ☐ Classroom ☐ Recreational ☐ Commons ☐ Board		
 ■ **AW7** Page 15	☐ Dormitory ☐ Library ☐ Classroom ■ Recreational ☐ Commons ☐ Board		

P - Pendant **W** - Wall **R** - Recessed **S** - Surface

Perimeter and Cove lighting is an important supplemental and even primary lighting source for many educational facilities. These lighting choices are designed to illuminate boundaries without contributing glare to the environment. Both Perimeter and Cove lighting installations are available in a variety of lamp/control options to support any architectural requirements.



- **PERIMETER | R**

- **COVE | R**

Metalumen manufactures a selection of luminaires that feature a variety of styles. These luminaires all provide a distinctive architectural appeal that integrates within a variety of different applications including Educational. Metalumen has a rich history of providing quality lighting products – for over 35 years we have been "bringing ideas to light."

- **PIATTA | P**

- **STAIL | P, S**

Induction outdoor – new from Metalumen is our induction program. Featuring optimum illumination and reduced energy consumption, this product line has been optically designed to provide excellent pathway/building and parking lot lighting. Edulumen provides solutions for educational light – both indoors and out!

- **AW70**

Visit www.metalumen.com for information on each fixture listed above

EDULUMEN™ Educational Lighting

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Please refer to black and white ordering guides for detailed product information and photometrics or visit our web-site at www.metalumen.com

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R0-12-10

Metalumen
Ideas brought to light