

### 自然採光事業部の理念

ミッション

#### ウェルビーイングな暮らしを実現する

ウェルビーイングとは、肉体的にも、精神的にも、社会的にも、 健康な状態にあることを指します。 生活を豊かにする自然採光事業で人々の暮らしを幸福にします。

ビジョン

#### 自然採光のクリエイター

自然採光が人々の暮らしを幸福にする社会を実現するために、 自然光のあるよりよい環境創りができるよう常に挑戦し続けます。

バリュー

#### 自然採光で元気を創る

自然光には作業効率を上昇、ストレスを軽減する効果があります。 誰もが過ごしやすい健康的な空間を創り上げます。

### 納入実績

全国で 180件 以上



















### ご提案1 自然光で生産性向上

#### コンセプト 陽のもとに集うワークプレイス

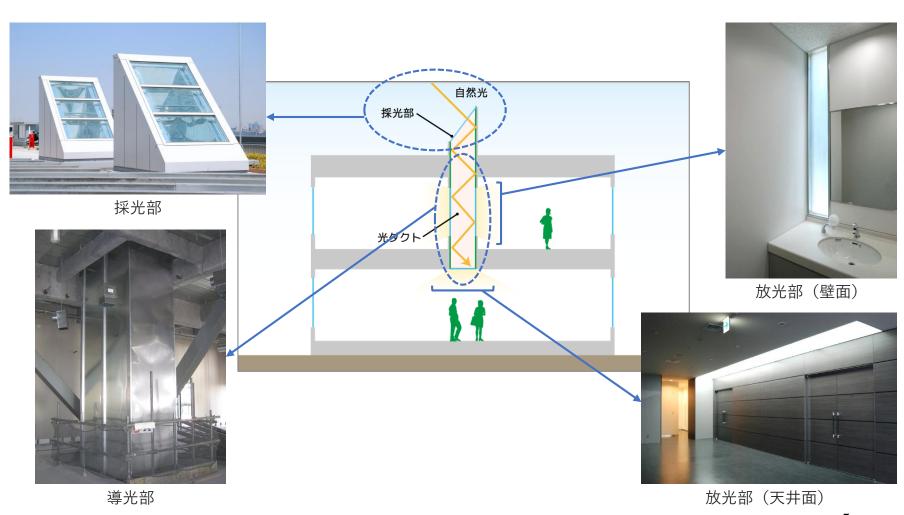


光ダクトにより基準階の「4面採光」を可能とし、自然要素である 光によって、**知的生産性の向上を目指したワークプレイス**である。



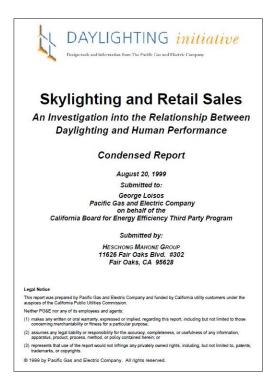
## 自然採光システム「光ダクト」

#### 採光部から取り入れた光を高反射鏡面で室内に運び放光する



### 自然光の働く人への効果

#### 作業効率上昇



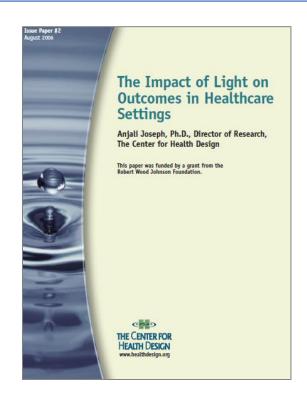
太陽光のあたる環境では

#### 従業員の集中力が増し

作業効率が上昇する。

"Skylighting and Retail Sales" California Board For Energy Efficiency

#### ストレス軽減



1日に3時間以上自然光に あたっている人はストレスが 少なく**仕事の満足度が高い**。

"The Impact of Light on Outcomes in Healthcare Settings"
The Center for Health Design

### ご提案2 癒しの休憩所

コンセプト 木漏れ日のなか、つかの間のくつろぎを。



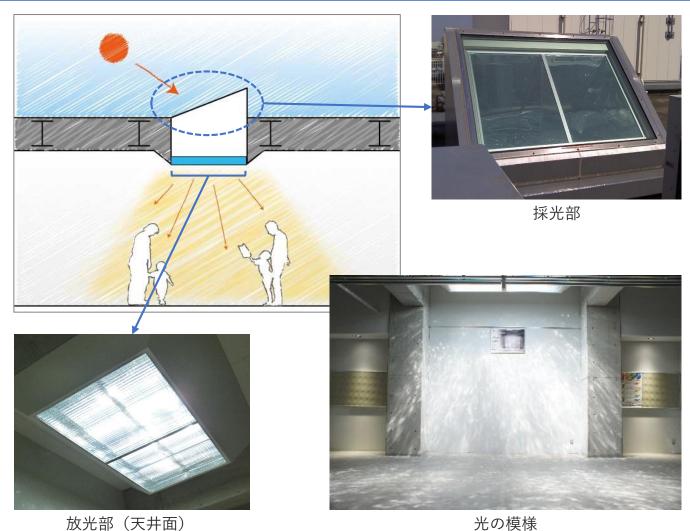


室内緑化空間における木漏れ日演出には **疲労回復・ストレス緩和効果**の向上が期待できる。

「京葉市川PA(下り線)室内休憩スペースにおける癒し空間の創出について」 株式会社ネクスコ東日本エンジニアリング、東日本高速道路株式会社、千葉大学大学院園芸学研究科

### 木漏れ日装置「スカイシャワー」

#### 自然光を室内に拡散し、木漏れ日模様を演出する採光装置



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### 自然光の心身への効果

#### 睡眠の質向上



日光に当たる人は、当たらな い人より睡眠時間が1日46分多

く、睡眠の質が良くなる。

Journal of Clinical Sleep Medicine Vo.10 No.6 2014 (616P) (School of Architecture, University of Illinois at Urbana Northwestern University, Chicago)

#### リラックス効果



木漏れ日区では、自律神経バランス の指標となる交感神経と副交感神経 の割合がリラックス状態にあった。

「京葉市川PA(下り線)室内休憩スペースにおける癒し空間の創出について」株式会社ネクスコ東日本エンジニアリング、東日本高速道路株式会社、千葉大学大学院園芸学研究科

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### ご提案3 自然光あふれる学びの場

#### コンセプト「うち」と「そと」の2つの環境がある校舎





光/ 熱/ 風などの異なる多様環境を創出し、集中学習から協調学習、 リラックスまで学習スタイルに応じ、生徒が自ら学習環境を選択し、 自ら工夫して学習できるように計画している。

### 自然光の子どもへの効果

#### 出席日数増加

### 成績が良くなる

Student Performance in Daylit Schools

ANALYSIS OF THE PERFORMANCE OF STUDENTS IN DAYLIT SCHOOLS

Innovative Design 850 West Morgan Street Raleigh, North Carolina, 27603

#### ABSTRACT

The conclusions of a recent research project on the impacts of full-spectrum light on student performance and health prompted us to investigate the performance of students attending three daylit schools that were designed by our firm. The 1992 "Study into the Effects of Light on Children of Elementary School Age: A Case of Daylight Robbery" was conducted in Alberta, Canada by the Policy and Planning Branch of Alberta Education. Over a two year period, the study compared children attending elementary schools with full-spectrum light versus children attending similar schools with normal lighting conditions.

- a. the students in full-spectrum light were healthier and attended school 3.2 to 3.8 days more per year,
  b. libraries with superior light resulted in significantly
- c. full-spectrum lighting induced more positive moods in students; and
  d. because of the additional vitamin D received by the
  students in full-spectrum light, they had 9 times less
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- dental decay and grew in height an average of 2.1 cm more (over the two year period) than students attending schools with average light.

The following analysis investigates the relationships between elementary and middle school student performance and natural daylighting. The performance of students attending three daylit schools designed by Innovative Design for Johnston County Schools, North Carolina was analyzed and compared to the County school caronia was analyzed and other new schools within the same County. The first daylit school, completed in August of 1990 was the Four Oaks Elementary School. The Clayton Middle School and the Selma Middle School were very similar in

1. EVALUATION AND COMPARISON OF TESTING PERFORMANCE

To compare the performance of the students, the test results from both the California Achievement Tests (1987/88 -1991/92) and the End-Of-Grade Tests (1992/93 - 1994/95) were compiled for every school (16 elementary and 8 middle schools) within Johnston County. The test result summaries were provided by the Johnston County School System. From 1987/88 through 1991/92 the average total battery scores of the California Achievement Tests were compared for 3rd, 4th and 5th grade students. First and second grades were not tested. After 1991/92 the average of the reading and math components of the End-Of-Grade Tests are used to compare performance.

ough the 1991/92 school year. The tests were admi in March or April of the school year. After the 1991/92 school year, the evaluation testing was switched to End-Of-Grade Testing and was given in May of each year. Because of the differences in the tests, it has been recommended by both Johnston County Schools and State Department of Public Instruction that we do not compare scores between the two

The following criticle was published in ASHRAE Journal, June, 2002. © Copyright 2002 American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 21st presented for educational purposes only. This article may not be copied and/or distributed electronically or in paper from without permission of ASHRAE.

ASHRAE Journal

#### **Daylighting and Human Performance**

D sylighting is the practice of using natural light to provide illumina-in interior environments. Fifty years ago, practically all schools and workplaces used daylights at the primary illumination source. When the districts, and classified their districts, and classified the advent of inexpensive electricity and widespread use of fluores-quality of daylight available. We chose cent lighting in the 1950s and 1960s, states began to abandon requirements for minimum daylight illumination in their building codes. year in one classroom. Thus, we could As energy costs soared, starting with the energy crises of the 1970s, directly isolate the effects of that one the glazed areas of buildings came to be regarded by many as an the glazed areas of buildings came to be regarded by many as an

We also specifically selected districts
energy liability, seen as increasing heating and cooling loads. Since
that had a number of classrooms lit from cooling loads typically dominate in non-residential buildings, solar gain through windows became a driving concern.

above with skylights or roof meaitors ("coplighting"). We reasoned that day-light provided through windows might

for daylight, were constructed with and cooling can be dramatic. I provided from above typically had lower ceilings and lower which to volume ratios. Older buildings were often retro-france of indoor environments on ence results. Thus, we would be more into the distance of the control of

trend. First, when lighting electricity the relationship of daylight with these consumption is considered along with outcomes. Accordingly, we have been bearing and cooling as part of a whole studying the association of increased size of schools, etc. We added informabuilding energy equation, daylighting daylight with student performance and typically provides a net energy benefit.

retail sales. This summary article decal conditions of the classrooms where Daylight is intrinsically more efficient scribes the methodology and findings these children were assigned. We re-than any electric source because it pro-from the study<sup>1</sup> in schools. vides more lumens per unit of heat con-tent. If appropriate daylighting tricts that had a range of daylighting techniques are used to displace electric continuous in their classrooms. We col-

ASHRAE Journal|June 2002

have complicating factors, such as the New buildings, no longer optimized illumination, the savings for lighting quality of view, whereas daylight

available in our schools and workplaces during the past half-century. Eight in ancedotal reports. However, five work curriculums and resting protection. Two forces are working to reverse this formula ciscinflic studies have addressed. The districts also provided us with in-

太陽光が溢れている教室の 生徒は、健康的で**年間** 3.2 日~3.8日出席日数が多い。

Analysis of the performance of students in Daylit Schools (American Solar Energy Society)

たくさんの窓や自然光が当たる教室の生 徒は、それらが最少の教室の生徒と比べ 全国共通テストで**7~18%成績が高かった**。

> ASHRAE Journal 2002年6月号 "Daylighting and Human Performance"

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### 自然採光のクリエイター

# "自然採光で元気を創る"







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- ▶ 具体的な案件のご相談
- ▶ 模型によるデモの実施

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TEL: 03-3751-5113

\ "元気を創る" アイデア見つかる /



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