

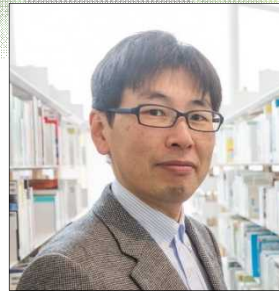
# FY2016 National Institute for Educational Policy Research, Seminar on Educational Facilities Research



Ms. Pia Grell Sørensen,  
Learning consultant, and the head  
teacher of Halsnaes Lilleskole



Ms. Lene Jensby Lange,  
CEO of learning space design studio  
Autens



Shunsuke Ito  
Professor of the School of the  
Information Environment, Tokyo  
Denki University



Satoru Nagasawa  
Professor Emeritus  
Toyo University

## “What is Effective Classroom Design?”

# School Architecture in Japan and Denmark Report

Tuesday, January 24, 2017

Ministry of Education, Culture, Sports, Science and Technology  
Auditorium No.2

◆ Hosted  
by:



National Institute for Educational Policy Research,  
Ministry of Education, Culture, Sports, Science and  
Technology

◆ Supported  
by:

Architectural Institute of Japan



# FY2016 National Institute for Educational Policy Research, Seminar on Educational Facilities Research

## What is Effective Classroom Design?

School Architecture in Japan and Denmark

Tuesday, January 24, 2017

13:30 to 17:30

Ministry of Education, Culture, Sports, Science and Technology Auditorium No.2

A 2016 Lecture on Study of Educational Facilities was held on Tuesday, January 24, 2017, at the Second Lecture Hall of the Ministry of Education, Culture, Sports, Science and Technology. This lecture series has been annually conducted since 2010 on different topics at the National Institute for Educational Policy Research. This year's lecture was held on a topic of "What is Effective Classroom Design? and School Architecture in Japan and Denmark," and 170 guests including educators and school architecture professionals from across Japan attended the lecture.

At the beginning of the lecture, Director Tsuyoshi Sugino delivered opening remarks as the host, including an explanation of the purport of holding the lecture. Subsequently, Dr. Shunsuke Itoh, professor of the School of Information Environment, Tokyo Denki University, Ms. Pia Grell Sørensen, head teacher of Halsnaes Lilleskole in Denmark, Ms. Lene Jensby Lange, CEO of learning space design studio Autens, and Dr. Satoru Nagasawa, professor emeritus of Toyo University, delivered speeches.

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## I. Opening remarks

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## Opening remarks

Tsuyoshi Sugino,  
Director General, National Institute for Educational Policy Research

At the opening of the 2016 “Seminar on Educational Facilities Research,” I would like to deliver my words on behalf of the host. First, allow me to express my sincere gratitude to education board members, school officials and people interested in school facilities for attending the lecture despite your busy schedule. The National Institute for Educational Policy Research has held a “Seminar on Educational Facilities Research” every year by inviting professionals in school facilities with the aim of collecting knowledge on school facilities in other countries, exchanging opinions with professionals, and accumulating and transmitting our knowledge on the study in Japan and abroad. This year’s lecture is the eighth in the series.

The topic of this year’s lecture is “What is Effective Classroom Design?.” In the school architecture in Japan, forms such as open spaces have gradually taken shape since the 1970s, and the improvement of school-related facilities has been sought and various school spaces have been formed. In the meantime, a large number of school buildings that were built 40 to 50 years ago have now been dilapidated, and their renovations are urgently needed. It can be said that it is time to rethink the ideal form of school facilities, classroom spaces in particular.

For today’s lecture, we invited Ms. Pia Grell Sørensen, a learning consultant and the head teacher of Halsnaes Lilleskole, and Ms. Lene Jensby Lange, CEO of learning space design studio, from Denmark. Mses Sørensen and Lilleskole, who have been engaged in design of school facilities and explored new forms of classrooms, will present a broad range of matters such as concepts and approaches of such new forms of classrooms and specific examples. We also invited Dr. Shunsuke Itoh, professor of the School of the Information Environment, Tokyo Denki University, and Dr. Satoru Nagasawa, professor emeritus of Toyo University, as lecturers from Japan. Dr. Itoh will provide a comprehensive explanation of the transition of design plans in school architecture in Denmark, class development, and use of space. Dr. Nagasawa will present the progress to date of the design plan for classroom spaces in Japan based on the results of his long years of study.

I would like to express my gratitude to the lecturers for attending this lecture meeting despite busy schedule.

In closing my opening remarks on behalf of the host, I hope that today’s lecture will provide you with a beneficial opportunity for considering effective classroom design and an effective learning method, and contribute to the improvement of the learning environment for all school children.

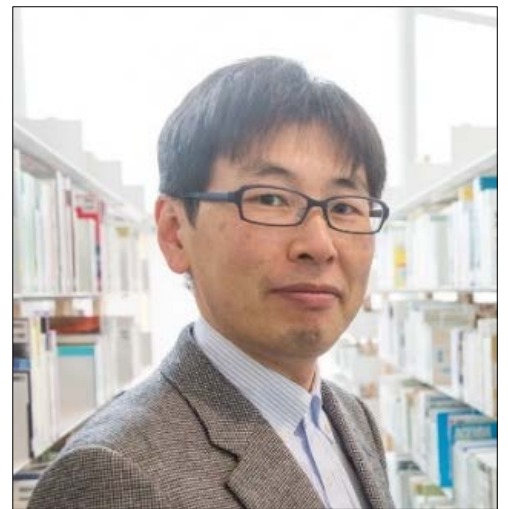
## II. Keynote Speech

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# **Schools in Denmark: Architectural planning, class teaching and use of space**



**Shunsuke Ito**  
**Professor of the School of the Information Environment,**  
**Tokyo Denki University**

# デンマークの学校建築

計画の系譜と授業展開・空間の使い方

Schools in Denmark: Architectural planning, class teaching and use of space

January 24, 2017

Lecture on Study of Educational Facilities by the National Institute for Educational Policy Research

Shunsuke Ito

Professor of the School of the Information Environment,  
Tokyo Denki University

Good afternoon. My name is Ito, and I'm from Tokyo Denki University.

First of all, I'm going to talk about the planning of school architecture in Denmark, as shown in the title above, in about 30 minutes.

I have been involved in observational research in Denmark. I will introduce what I have learned through my research, and then provide background information for the speeches of the two teachers from Denmark, who are the main lecturers today.

# 自己紹介

Self-introduction

- Specializing in architectural planning and environmental psychology
- 1999-2001: Studied at the Danish National Building Research Institute (Statens Byggeforskningsinstitut), and conducted research on school architecture in Denmark
- From then on, have conducted research every several years, and performed fixed-point observation at several schools

First, let me briefly introduce myself.

I specialize in architectural planning and environmental psychology, and school architecture is also one of my major fields of research. After acquiring a doctor degree and before being assigned to Tokyo Denki University, where I currently work, I studied at a national institute of Denmark for about a year and half. During my staying in Denmark, I conducted a fieldwork at schools in Demark. Since being assigned to the present workplace at Tokyo Denki University, I have been to Denmark every several years to conduct research and tracked changes at several schools by performing a kind of fixed-point observation.

Actually, I have gotten a lot of support from Ms. Pia, who is one of the lecturers today. She has allowed me to observe classrooms since my first research in 1999.

# 今日の内容

Today's presentation

- 1.デンマークの学校計画  
Building planning of Danish schools
- 2.学習空間・授業展開の変化(事例紹介)  
Changes in organization of space and teaching
- 3.新しい学習観と空間  
New educational concepts and space
- 4.学校文化の比較考察  
Differences in school culture

I'm going to talk about these four topics. I do not think I can cover all the contents of the handout due to time constraints. I will talk while making adjustment as appropriate according to the time.

First, I will talk very roughly about how schools in Denmark have been planned. Secondly, I will present two cases where the schools that I have observed in a fixed-point manner especially around 1999 to 2013 as mentioned above have reformed their buildings and spaces, and the teaching methods and learning styles at these schools have been changed. In the third part, I will briefly present cases of the recent new viewpoints and approaches in Denmark for teaching methods and learning styles, which have come out in the past ten years or so. And finally, I will present two stories about considerable difference in school culture between Japan and Denmark, of which I have become aware during my long years of research.

# 1. デンマークの学校計画：学校制度

## Danish school system

- Compulsory education in Denmark: public elementary and middle schools are nine-year basic schools called “folkeskole”
- Compulsory education was established in 1814, and four major revisions of the Education Act have been made since then
- Traditionally, importance is attached to individuality and classes
- The class size is 28 students at a maximum, 19 students on average

Let me begin with background information.

The compulsory education in Denmark is characterized by public elementary and middle schools being nine-year basic schools called “folkeskole,” which is equivalent to public schools. In Denmark, compulsory education was established in as early as 1814, and historical materials suggest that the Education Act has since been substantially revised four times. Traditionally, the whole Scandinavian society attaches importance to individuals. What has interested me since I started research in Denmark is the fact that the country in fact attaches significant importance to the class unit. In other words, importance is attached to both individuality and the class unit. I find this combination in Danish schools interesting.

One of the surprises to me was a custom that was practiced probably until around 1999, but it is said that the custom is not commonly practiced now. They say that school education was formerly conducted under a system in which the same teacher takes charge of the same class for nine years without class shuffle. It is said that the system has recently changed a lot. But what’s interesting is the way teachers attach importance to the development of students as individuals and to their development as group members at the same time. I feel sympathetic to that approach from the standpoint of observing schools in Japan. I’ve heard that the class size is 28 students at a maximum, but is below 20 on national average.

## 1. デンマークの学校計画：プランタイプ概観

Outline of school building types

- 戦後，人間的な環境を目指した中庭型が作られる  
Post WWII: gård and atrium types
- 1960～70年代 片廊下型が多数建設される  
60-70s: corridor style *kamskolen*
- オープンプランの導入→コモンルーム型が普及  
70-80s: open-plan movement and common room type
- 住居的デザイン，分棟型  
80-90s: residential design
- オープンの再発明：フレキシブルから多様化へ  
2000-: reinvention of the open-plan, from flexible space to differentiated space

Now, let me briefly talk about how school architecture has developed after the World War II.

Around the time after the end of the World War II, school architecture intended for a more human environment was designed by various architects mainly in the area surrounding the capital of Copenhagen. At that time, a large number of school buildings having courtyards of different types, such as large ones called “gård” or “atrium” and small dispersed courtyards, were built.

In the 1960s and 1970s, the number of school children rapidly increased, and corridor style *kamskolen* schools were built in large quantity. I think this is similar to Japan. Another similarity to Japan is the introduction of open-plan schools in the 1970s to 1980s, during which such schools were built on an experimental or pioneering basis in some cases. But, open-plan schools with no walls did not firmly take root as a very common form in Denmark, and a type in which classrooms are first built and then a common room shared by several classes is constructed, was becoming a mainstay in the 1980s.

It seems that in fact not many new schools were built in the 1980s and 1990s, but separate-building type schools and those with a residential atmosphere were designed. In 2000 and beyond, new open plans or space concepts that seemed to have been rediscovered in some ways were created. A shift from the idea of creating a large, flexible space like an open plan to the approach of creating a segmented space having sort of diverse or various functions is seen. I’m going to present case examples of this in the latter half of my speech.



Pre-WW II Copenhagen schools

I'm going to show some photos. In the pre-war period, these solidly designed school buildings were seen in many places.

A school designed by Arne Jacobsen

## Munkegårdsskolen



Munkegårdsskolen, designed by Jacobsen, is a representative example of a post-war school having a courtyard, and is very famous also in Japan.





Munkegårdsskolen

In this design, each classroom has an individual courtyard like this, and natural light is introduced into the classroom through these high windows.



Besides these school buildings, there are still many school buildings that have been extended through generation after generation because the culture of architectural technology is very different from Japan. This is very interesting from the architectural point of view.

This school is Skovshovedskole in the suburbs of Copenhagen. In this example, another building of the same school has been gradually extended over the ages. What particularly interests me is the pavilion-type school building (top left, top right), and this is a small separate-type school building. In the same period, pavilion-type or separate-type plans, which placed focus on ventilation and daylighting, were seen also for hospital buildings. Pavilion-type school buildings are very interesting from the perspective of the architectural trend, and are very beautiful.



Skovshovedskole



The photo on the right shows a spiral staircase in a school building. They say this is almost the oldest reinforced-concrete staircase. These old buildings are also used still now.

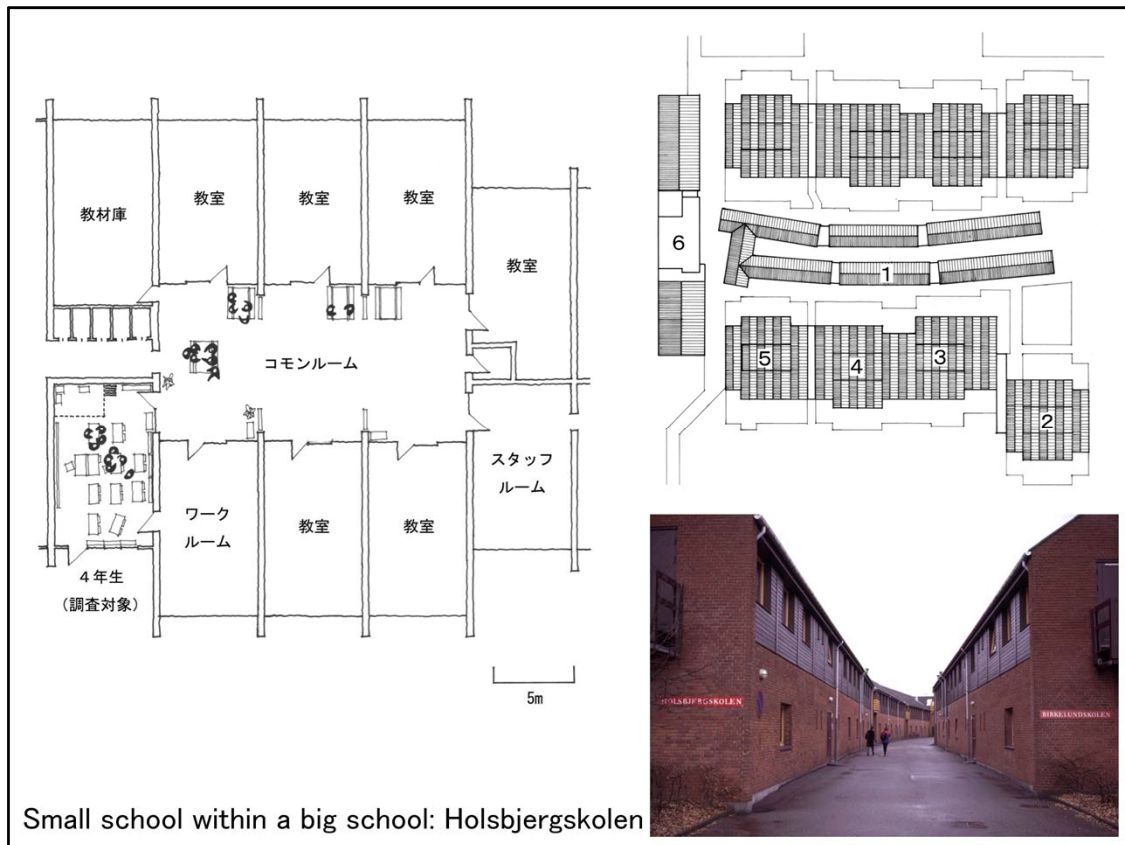


Open plan: Kvaglundskolen

This is a representative example of an open-plan school in the 1970s. In fact, open-plan schools are very rare now. Teachers of this open-plan school and those of another, which I am going to present later, say that their schools are the last open-plan schools. So, I think that there are probably only two open-plan schools remaining in Denmark. At one time in those times, school buildings in which such space frames are assembled and the space below the frames is arranged were constructed on an experimental basis.



Then, school buildings were gradually shifting to types in which sufficient classrooms are secured.



Small school within a big school: Holsbjergskolen

I think this can be considered as a typical example of a plan of the times. Classrooms are arranged to surround a common room. Although the walls can be fully opened, they are actually rarely opened, and independent lessons are conducted in classrooms. This common room is used for other activities. This plan is configured in that manner. This type was very common in the 1980s.

Another characteristic of this school is that the school was constructed considerably large for an inevitable reason, two buildings of the same plan are symmetrically constructed on the same premises this way, and the two buildings - one in the north and the other in the south with this border in between - are operated as completely different schools. In other words, this is an approach where a large school is divided into small schools to keep the size of the group appropriate. Such an approach was also taken by some local governments in the 1970s and 1980s.

## Residential design



This is an example of a residence-conscious design in the 1980s to 1990s. What interests me is the fact that while the school shown in the top photo was designed as inspired by the design of traditional farmhouses, the school in the bottom photo that is in a new residential area in the suburbs is designed to fit with the design of the neighboring collective housing. Although both of the two schools have residential designs and are human-scale buildings, they differ in ways of interpretation and expression. So, this is a very interesting example.

A model school of work style similar to offices

## Hellerup skole



This is one of the latest schools, and the photo was probably taken in 2002. The school is an experimental open-plan school built in Gentofte in the north of Copenhagen. I think Mses. Pia and Lene will mention Gentofte as the main city in their speeches. Styles of schools have rapidly developed this way.



## 2. 学習空間・授業展開の変化

Changes in organization of space and teaching

1999/2000年

- 空間：教室＋各種アレンジをしたコモンスペース

Space: classroom + common room arranged for various activities

- 授業：時間ごとにアクティビティが異なる

Teaching: most of the lesson dedicated to a certain activity

2008～2013年

- 空間：フレキシブルな教室＋用途を固定した小空間

Space: flexible classroom + small spaces with specified functions

- 授業：同じ時間内に頻繁にアクティビティを切り替え

Teaching: frequent transition of activities within lesson

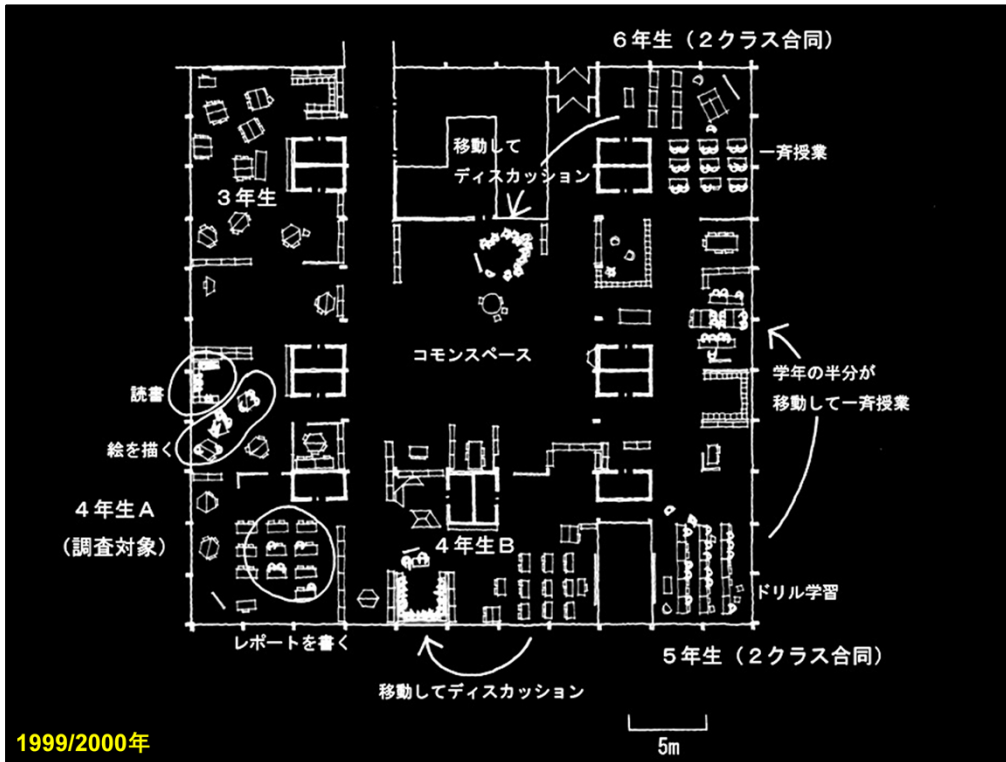
Then, how have learning spaces and teaching methods changed?

Around 2000 when I started my research, classrooms as units were first secured, and then variously arranged spaces were additionally prepared in common spaces and open plans. That was the mainstay of common space uses. And, teaching and learning styles such as mass teaching, individual learning, group learning, discussions and works were incorporated into teaching methods, and each of them lasted for a relatively long period. I felt that activities were segmented by time zones. For example, mass teaching was conducted in a certain time zone in principle, and then all students performed a group work in the common space in the next time zone.

That approach has changed a lot in the past five to six years as I have observed the transition. In terms of space production, activities were significantly enhanced rather in classrooms, and various settings were created in the classroom. A lot of small corners for fixed uses are prepared in the classroom. And, within the same one-hour class, activities are frequently switched, children move very frequently, and settings for teaching are changed. The ways of creating a learning space and conducting classes have substantially changed in 15 years, which is relatively short. I have found through observation that these changes have been made.



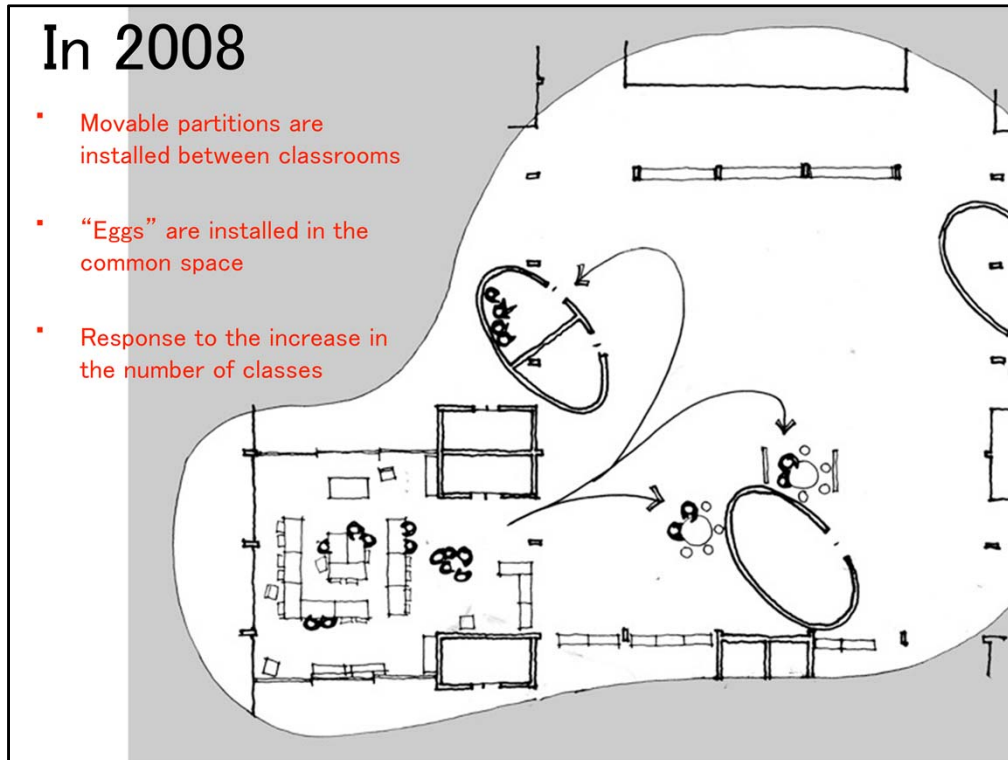
This is another example of changes of schools. This building is one of the open plan schools built in the 1970s.



This is what the school looked like 15 years ago. To use the school, a wall-free space was segmented with partitions and furniture this way. As shown in the furniture layout, the classroom sections are arranged almost for mass teaching. But, besides that, work spaces and spaces for sitting in a ring are dispersed, and classes move while using different spaces. Class lessons were provided that way.



These photos show students using various places.

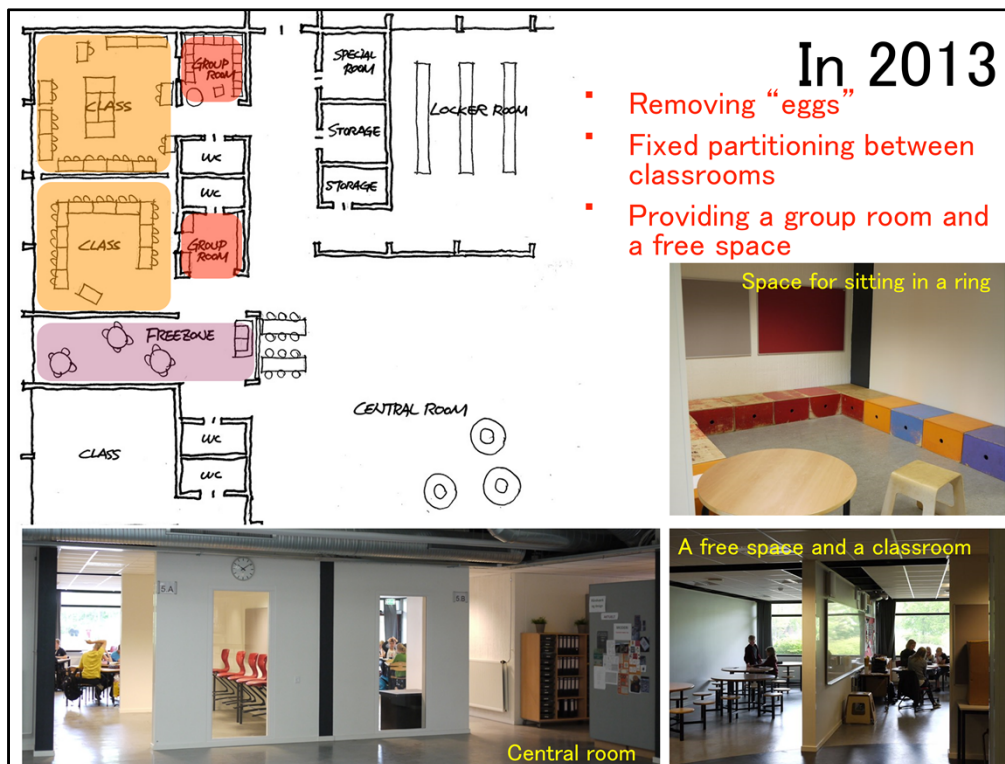


The situation changed a lot in 2008. As I mentioned earlier, all classrooms were previously segmented with furniture, not with walls. Instead of segmenting the space with furniture, sliding-wall partitions that extended from the floor to the ceiling were placed in the classroom section to segment the classroom. Additionally, small oval rooms called “eggs” were built in a renovation to serve as individual spaces or personal computer spaces. That was intended to separate various types of spaces in an architectural manner, and install partitions between increasing classrooms to secure individual spaces between the classrooms.



These photos show classes at the times. In fact, there was an enormous acoustic problem. This sliding partition has a gap at the ceiling and the floor, and does not reach a window. So, the sounds of the classroom next door were heard very clearly. In some case, lessons or discussions were run in a classroom, while music practices were performed in another classroom next door, and the lessons had to be stopped.

And, one of the middle spaces called “eggs” was used as a personal computer room, while the other served as a group room. This suggests that installing partitions was not as effective as expected in terms of proper separation between classroom spaces.



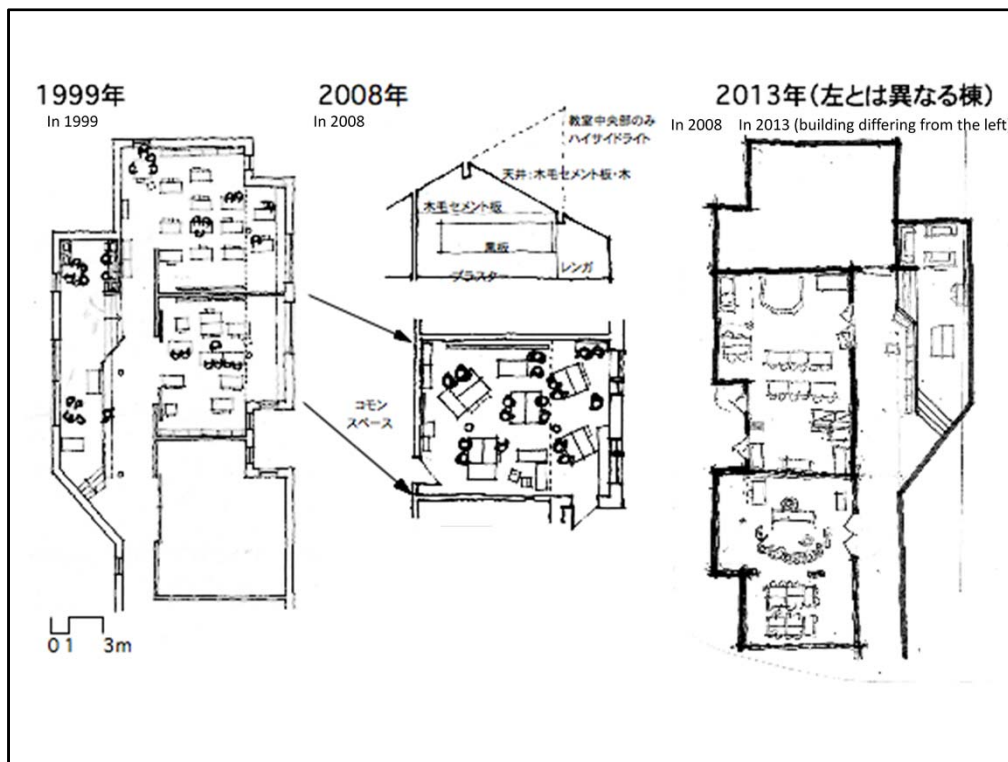
When I revisited the school in 2013, it had been modified again. In a renovation implemented immediately before my revisit, the sliding wall sections were replaced to fixed walls. Moreover, a classroom zone and a work-group space called a free zone were created, and a small room for sitting in a ring was built at the entrance of each classroom, so that the area was clearly segmented on a class-by-class basis. The school was modified to a style in which an exclusive small room is provided to each classroom, and a free space was built for every two classes. I’ve heard that the problem with sound was mostly improved.

This way, this first example represents coping with the change in the ways of conducting class lessons and the improvement of the acoustic environment through two major renovations in 15 years.



The next example is a separate-building type school that was constructed in the 1980s. This is also located in the suburbs of Copenhagen. Personally, this is the most favorite school I have ever seen. As shown in this layout drawing, it seems that L-shaped and U-shaped classroom buildings are arranged in the middle of a park, and they are all connected to a residential area in terms of landscape design. This school was designed by a group called Vankunsten (by AART) in Denmark. I like their designs very much, and I think this school is also a very good work of them. This is not only excellent in figurative sense, but it also provides a human space that is adapted to the scale of children, as seen in the photo on the left.





This school was originally constructed in a form similar to a semi-open type. It had classrooms, a large sliding wall was present between these, and they were separated from a common space. The common space section was divided with a floor level difference into a corridor section and a section where children could perform works, and spaces were created in a very elaborate manner. Open transoms were also built.

However, around 2002, a renovation was carried out to replace all sliding walls to fixed walls that were closable with doors. The reason for the renovation was that sounds spread in many directions, which gradually made it difficult for the children to concentrate. Therefore, the classrooms returned back to slightly traditional ones. In addition, besides the erection of these walls, another renovation seems to have been conducted. In the renovation, the walls were relocated to make the classrooms bigger. A change in which walls were erected to make the classrooms closed to some degree and slightly expand the classrooms was made in a short period.

If you look at the plan view, you will find that while the classroom section was arranged for mass teaching in 1999, activities other than the mass teaching seem to have been performed in the work space. As shown in the furniture layout drawings in 2008 and 2013, various places were created in the classrooms.



This slide shows what I talked about now. Previously, students used to go out of the classroom when performing a group work like this or various other works.

In 2008

Class lessons in certain time

集団編成	内容
学級全体	ギターに合わせて歌
学級全体	発表(教師の説明)
学級全体	発表(児童の発表)
個別学習	プリント、教師の説明
個別学習	プリント、児童どうしの会話、教師のサポート



- Making the classroom closed
- Changing the classroom size (large and small classrooms)
- Fast class lessons
- Less frequent use of the common room

Group formulation	Content
Whole class	Singing in tune with the guitar
Whole class	Presentation (teacher's explanation)
Whole class	Presentation (children's presentation)
Individual learning	Prints, teacher's explanation
Individual learning	Prints, conversation between children, teacher's support

Then, classrooms became flexible and had more functions, and various activities were performed in the classroom. Alternatively, children moved around more in the classroom, and more and more scenes were shifting in this trend.

All these things happen in only one hour. First, children sing, then the teacher gives an explanation, then children make presentations, and then they perform individual learning. Activities are changed very dizzyingly this way.

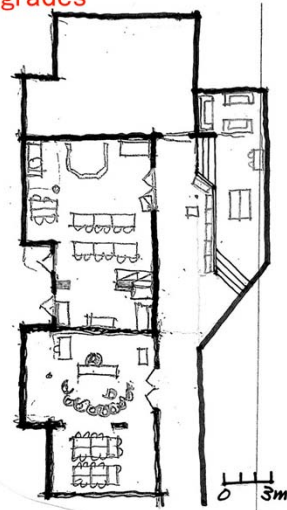
In 2013



- Arrangement that allows class development in the classroom
- For fifth graders, the whole grade is managed  
→ Spreading to other grades



Common space is used as resource center



In this case example, two classes are jointly managed. In this style, different settings are made in five or six places in two classrooms, and children come and go to these places to take classes. And, the common space is used as a teaching material or a resource center.

### 3. 新しい学習観と空間

New educational concepts and space

- 教室空間の再考  
Rethinking classroom space
- カリキュラムの個別化とプロジェクト型学習  
Individualized curriculums and project-based learning
- 学習活動・内容の多様化から学習スタイルの多様化へ  
(個別の行動的ニーズの観点, 新しい発想の次元)  
Differentiated learning styles (attention to individual psychological/behavioral needs adds a new dimension to learning space design)

In these case examples, including other case examples, how have the learning spaces changed? As shown in the example you saw now, the furniture layout and the setting approach in the classroom have changed significantly. And, major changes in education and teaching methods include the individualization of curricula and the fact that project-type learning, which played a relatively minor role in the 1990s, is becoming the core of learning.

What I would like to present next is the emergence of the concept of “diversification of learning styles.” I think the diversification of learning activities and contents has been an underlying theme since around the times of open education. What interests me is a phrase “learning style,” which I hear very frequently as I have visited various schools in Denmark. At many schools, I hear very often educational professionals talk about the idea that you should help different children learn in styles suited to the children because they have different attitudes and sensitivities to sound and light. That idea has also affected the shaping of classrooms as a recent trend.

## Classrooms in the future” In 1999/2000

A classroom reform project by two teachers. With the objective: “to change class lessons, we must change the space,” they changed furniture and interiors.

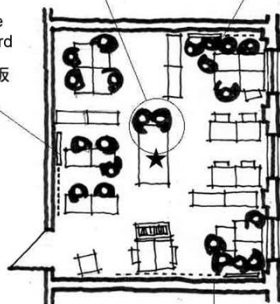
Pick up children, and provide individual guidance

Movable blackboard

児童を取り出して個別指導

移動式黒板

Movable blackboard  
移動式黒板



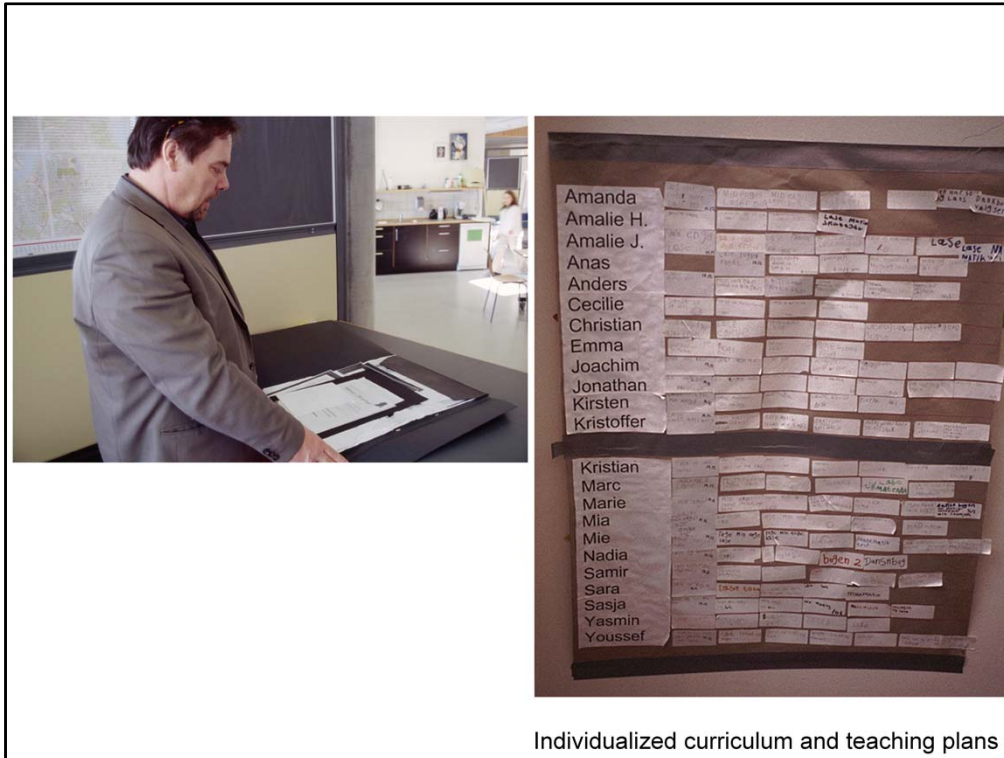
Classroom of the future

This is a “future classroom” produced by Ms. Pia, and I visited the facility in 1990. Having the idea of changing the classroom itself because new teaching approaches cannot be taken if the conventional classroom structure remains the same as the ordinary classroom, two teachers - Mr. Peter and Ms. Pia - worked on this reform project. In this example, the whole interiors of the classroom were completely replaced with new ones including newly designed furniture.



In this classroom space, mass teaching is completely eliminated, the teacher teaches the children while moving around, and the children promptly start works by themselves. The classroom is rather small, but very flexible. Blackboards are installed in several places. As this can be regarded as the destruction of frontality, blackboards are dispersedly placed.

The major effect of this classroom is that blackboards, which are not in the front but are located here and there, can serve as a medium that children can use. Blackboards are not a communication medium on which the teacher writes what the children should see, but they can serve as a tool for the children to collaborate with each other. This classroom was innovative in many senses including this, and I was tremendously impressed with this classroom.



Individualized curriculum and teaching plans

Another trend was rapid individualization of curricula. The photo on the left shows a portfolio used at Hellerup Skole, which I showed you earlier. The content of the learning varies with children and really differs every day. And the content of what a certain child has done and what the child is going to do are stored in one file. If the child sees this, he/she will understand what he/she has learned. In addition, if a different teacher sees this, he/she will know what the child has learned so far. So, what is the teaching style of this school like? The whole class holds a meeting, the first thing in the morning, before noon and in the afternoon each. Each child reports the progress, presents the content, or talks about the whole class. Other than the meetings, the children independently work on their respective tasks. The school takes such a learning approach.

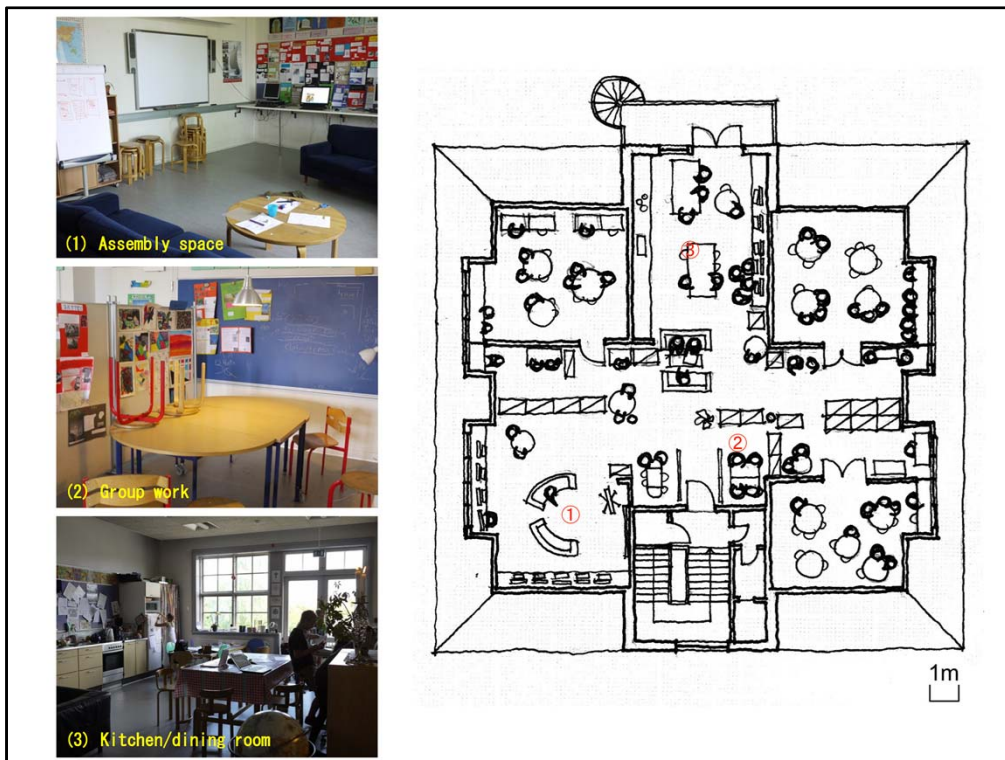
The photo on the right shows a notice board for lower graders of an ordinary elementary school. The curricula in the board vary with students. The content of what each child is going to learn this week is organized this way. This indicates that even ordinary schools are gradually shifting to the approach of individualizing curricula and learning plans in such a manner. So, there is less and less need for mass teaching.



“Learning style” and space  
Maglegårdsskolen



I said earlier that I often hear a phrase “learning style.” Here is an example of adopting such an idea in the layout of the surroundings of a classroom. This is a school called Maglegårdsskolen in Gentofte in the north of Copenhagen, and Ms. Pia used to work at this school. The building itself has been extended in many ways across times. The interiors of the building of a slightly old time have been refurbished in a very interesting way.



This is a sketch plan. This space originally consisted of closed classrooms, and they are now opened or glazed in some spots, and pieces of furniture are placed in various ways.

As you see the slide, very many facilities are built in this small space, such as an assembly space for many people with sofas (1), an enclosed office-like area (2), and room like a kitchen or dining room. And, a group consisting of students in three grades gather here, and education with focus on cross-grade project works is conducted.



At the beginning of a class, the teacher and children gather in the space installed with sofas, and explanations of projects they are working on are provided. All of them sit in a ring. After the explanations are finished, the children use various educational materials and personal computers that are arranged so that the children can take them by themselves and use them as needed. For example, result of project learning is compiled as a report in the form of a firm booklet. Project learning progresses in such a manner.



In the same personal computer area, a child performs a work while standing, another child sits on this table, and this child properly sits on a stool (photo on the top left). Every child can study in a comfortable position with which the child can concentrate the most.

For children who prefer a less stimulating environment, such a place is secured (photo on the bottom right). In the recent trend, a learning environment for children is created in a completely new way so that every child can study in a place where they can concentrate. That is very impressive.

## 4. 学校文化の比較考察

Differences in school culture

- 空間の使い方：いつ「学習展開」するか？  
Use of space: when does teaching spatially extend from the classroom?
- 個別性・特性の捉え方：合理的配慮は前提か特例か？  
Individual-based: is *reasonable accommodation* a precondition or an exception?

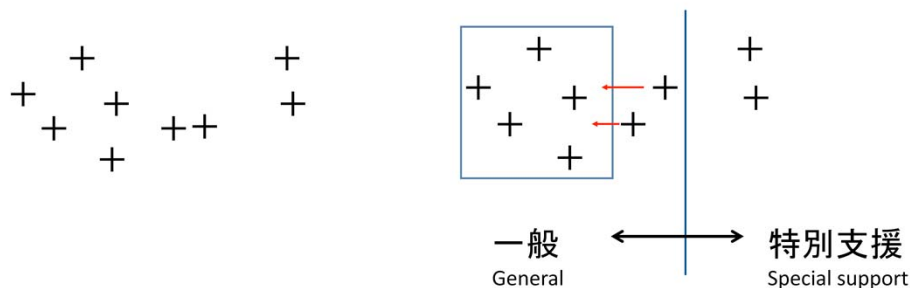
As I have observed several schools for a long period, I have found very many differences in school culture between Japan and Denmark. Actually, I had planned to talk about the two major differences indicated in the slide. But, there are only a few minutes left. So, I would like to finally talk about what I have noticed about the difference in the perception of individuality and trait, which is the second major difference.

There was a symbolic event that made me think that the way of thinking about dealing with or considering reasonable accommodation or individuality is different between Japan and Denmark. At a school I visited in Denmark, one of the children in a class had hyperactive tendency. The chairs in the classroom include only one chair with casters. In explaining the chair, the teacher says that this child cannot concentrate unless he/she moves around, so the chair is given to this child so that he/she can study while moving around.

A child with hyperactive tendency or a child with developmental difficulty may be included in a common class in some cases also at schools in Japan. At some schools in Japan, an assistant teacher joins a class having such a child, and the child studies in such an environment. The teacher says that the child manages to properly keep sitting thanks to various ideas and efforts. There is no doubt that this school is a good example where the school provides generous support to such children. But, I clearly feel a cultural difference.

## 合理的配慮は前提か特例か？

Reasonable accommodation: the line between “general” and “special”



### デンマークの学校

それぞれに適したサポート  
Each child treated individually

### 日本の学校

特別支援では手厚い個別サポート，一般級では「普通」に適応させる  
Individualized support for children with special needs, the rest expected to adjust

Essentially, you can't draw a clear line between children who need special support and those who do not, and traits are dispersed in a spectrum. This figure schematizes what the previous example indicates. In Japan, children beyond a certain line are subject to special needs education. As I have been doing research at special-needs classes and special-needs schools, I have found that the teachers actually make individualized teaching plans and conduct individualized teaching for individual children on the assumption that each of them has a different trait, ability and need. By contrast, in cases where a child with hyperactive tendency or developmental difficulty is included in a common class, not subject to special support, then assistance seems to tend to be provided toward fitting the child into the framework of average children to the extent possible as shown the previous example.

As I observe schools in Denmark, I feel that teaching is conducted on the assumption that every child even in a common class is different and needs different support. In case of special-needs classes or schools in Japan, teaching is conducted overwhelmingly on the same assumption. However, in other cases, it seems that rather a dynamic for adapting to the average is applied. Of course, there may be objections. But, I sense such a difference in school culture.

If I am correct, it seems that the approach adopted for special-needs classes and schools has more potential for education in Japan. As I observe special-needs schools, I feel that the ways of arranging classrooms and providing support have such potential. I do not mean that the current Japanese education is no-good, but I want to say that the very firm line between common classes and special-needs classes is a barrier that should be destroyed in the future.

## おわりに：デンマークの学校から感じること

Final remarks

- 空間を教育のツールとして改変し使いこなす  
Space actively used and changed as a tool for teaching
- 多様なスタイルを許容・奨励するのは学習体験・効率向上のため  
Individual styles encouraged to enhance learning experiences

In closing, I would like to present what I feel from schools in Denmark on the whole. I feel that they alter spaces hand over hand, and teachers have clear intention to change spaces and classrooms in specific ways in order to teach children in certain manners. In a sense, it seems that they have an approach of changing classrooms while actively making full use of classrooms simply as a tool for providing education.

I would like to mention one more thing. I talked about learning styles earlier. I did not mean that I appreciate such a learning style simply because that would be comfortable for children. I feel that the interviews were conducted probably on a firm ground that children with different ways of concentration would need a different opportunity in order also to encourage them to experience learning and increase efficiency. In fact, more Japanese teachers than Danish teachers who saw these slides react and say that these children are ill-behaved. But, I do not think this is a matter of behavior, and I strongly feel that behind this, they have the stance of improving learning efficiency in adopting that style.

That's all. Thank you for your attention.





# **Classroom design for 21st Century Learners - a Scandinavian perspective**



**Ms. Pia Grell Sørensen,  
learning consultant,  
and the head teacher of Halsnaes Lilleskole**

**Ms. Lene Jensby Lange,  
CEO of learning space design studio Autens**

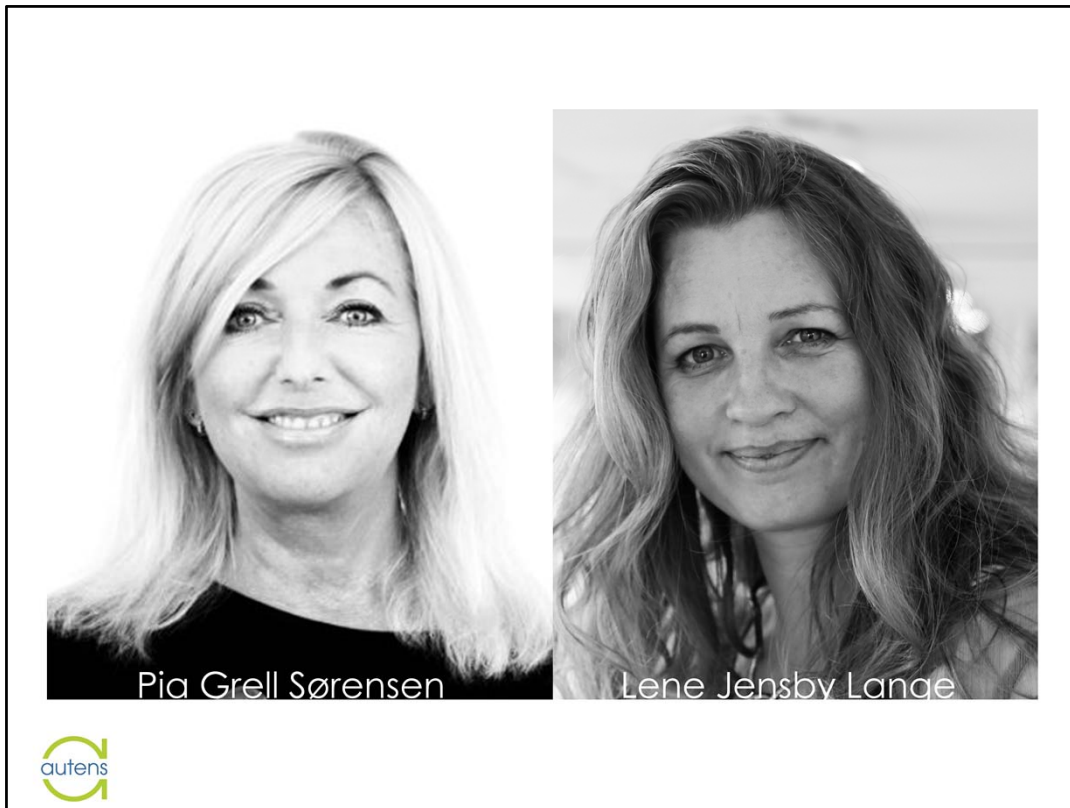


Ms. Pia Grell Sørensen (hereafter “P”):

Thank you very much for inviting us. Lene and I both feel honored to join wonderful people here in Japan, and also feel excited.

We are going to make presentations to you today about how practices of education and designs of learning spaces have changed in Denmark, Scandinavia and the whole Europe. We have brought lots of photos of innovative schools and classrooms in Denmark.

We hope that our presentations will be inspiring for you.



P:

First of all, I would like to briefly explain who we are and why we are invited for this event.

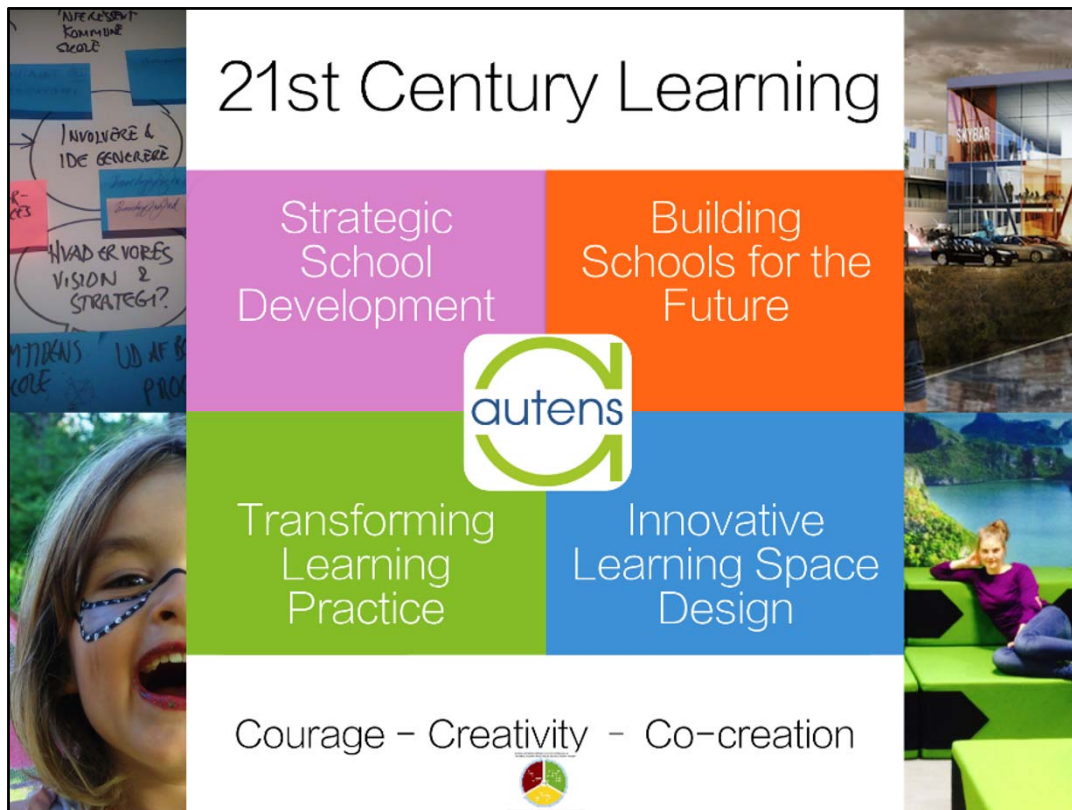
My name is Pia Grell Sørensen, and I have been engaged in teaching for many years. I originally received education for becoming a teacher. But, I became aware of something shortly after taking this job. I became aware how classrooms are designed, how they are used, and how immeasurable their impacts are on the behaviors of students. I was also aware that classrooms would have immeasurable impacts on what students will learn from the curriculum and what they will learn about themselves.

The guidelines for my working life have been trying to extend the capacities and learning abilities of students. I hope to share my experience and belief with you today.

An approach to the theme of effective classroom design requires educational knowledge, but excellent know how and ability to create new ideas in a traditional and standard classroom are also needed. You probably know that classrooms are very traditional around the world, and even those in different countries are very similar to each other. So, I am very pleased to share a table with Lene, who is a leading professional in Denmark in the learning in the future, development of schools and design of learning spaces. Lene and I have worked together on many projects. We think that the design of learning spaces should be always pursued together with the educational conception or goal that you intend to achieve.

Ms. Lene Jensby Lange (hereafter “L”):

Hello, every one. I am very pleased to come to Tokyo here. We have been looking forward to this opportunity. We would like to thank you for giving us an opportunity to share with you our viewpoint and Denmark’s viewpoint about space design.



L:

I would like to briefly talk about the consultant job, which is my occupation. I established a company called Autens 11 years go. At this company, I help schools, help architects, and help combine things. Basically, what we are doing is questioning what the future of education is, what the purposes of schools and education are, and what the form of learning is. How can we contribute to the reform of schools and the reform of the practices of teachers in order to do a favor for present and future students? We help architects reflect these challenges in architectural context. In other words, this means how learning spaces should be designed so that they help children's learning activities and are useful. And, that is the topic of our speeches today.

As Pia said, we have brought lots of photos. I think I am going to mainly share with you many things behind these photos as well as many theoretical backgrounds.

# Learning Space Design

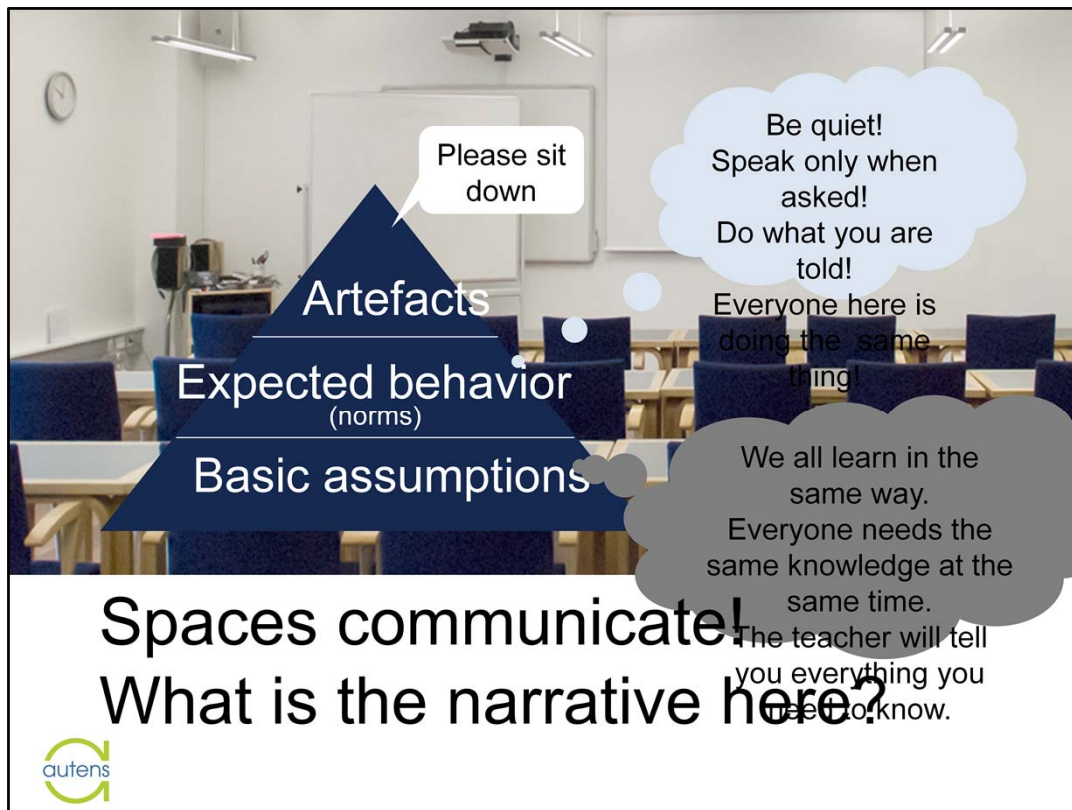
- A narrative
- A technology for learning
- A lever for new pedagogical practices

A tool for leading learning & schools



When working on the design of a learning space, there are various viewpoints. We consider a learning space as a narrative. This can be rephrased as what the learning space is intended to communicate, and how the learning space is going to help everyone acts. We have interpreted learning space as one of the technologies for learning.

Prof. Ito, thank you for giving a lecture full of suggestions about schools in Denmark. It was truly wonderful. Our speeches in response to the lecture will be focused on what kind of tool the learning space can become for “learning,” which will be waiting for us in the school field in the future.



P:

Through my experience, I have realized that learning is neither abstract nor continuity of incoherent activity. Learning is not simply an issue of teachers, students and curricula only. A learning activity is positioned in the context and culture where it is generated. Learners belong to a community that embodies a certain belief or behavior. Social exchanges that occur in the classroom have a huge influence on what the students learn. If you want to design an effective classroom, that is a very important element to be considered.

Take this traditional classroom as an example. What is the narrative here? From a cultural point of view, languages such as “be quiet,” “please sit down” and “do what you are told” may be used in this classroom. And, as the idea of the expected, appropriate behavior, the teacher may be in front of all students, who may be seated to listen, and a dialog may be held with only one student. If you want to design a classroom where the students are more motivated, more active and better concentrate on the learning process, you must not only change the design, but you must actually work to change the underlying assumption in the design of this traditional classroom.

The school system is based on two major flaws!



**Hans Henrik Knoop**

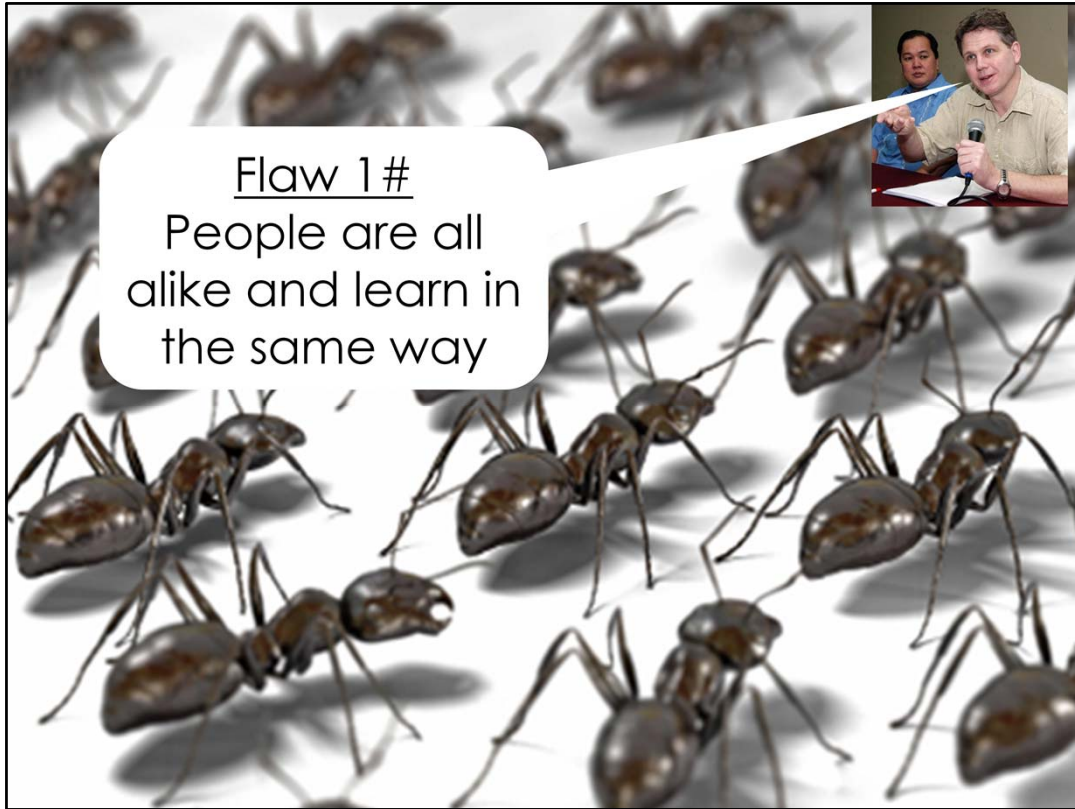
Extraordinary Professor at Optentia Research Focus, North-West University

Former research director, Universe Research Lab

Associate Professor, Danish Pedagogical University



Experts and researchers are rather critical of the assumption of the traditional school design. Danish Professor Hans Henrik Knoop, who is one of them, was my educator by chance when I started study at the University of Denmark. He said: “Our school system has at least two flaws, though you may say (that the traditional school design is) the basic assumption.” As he said, as a result of intensive brain research we can now prove that the traditional school design is wrong.



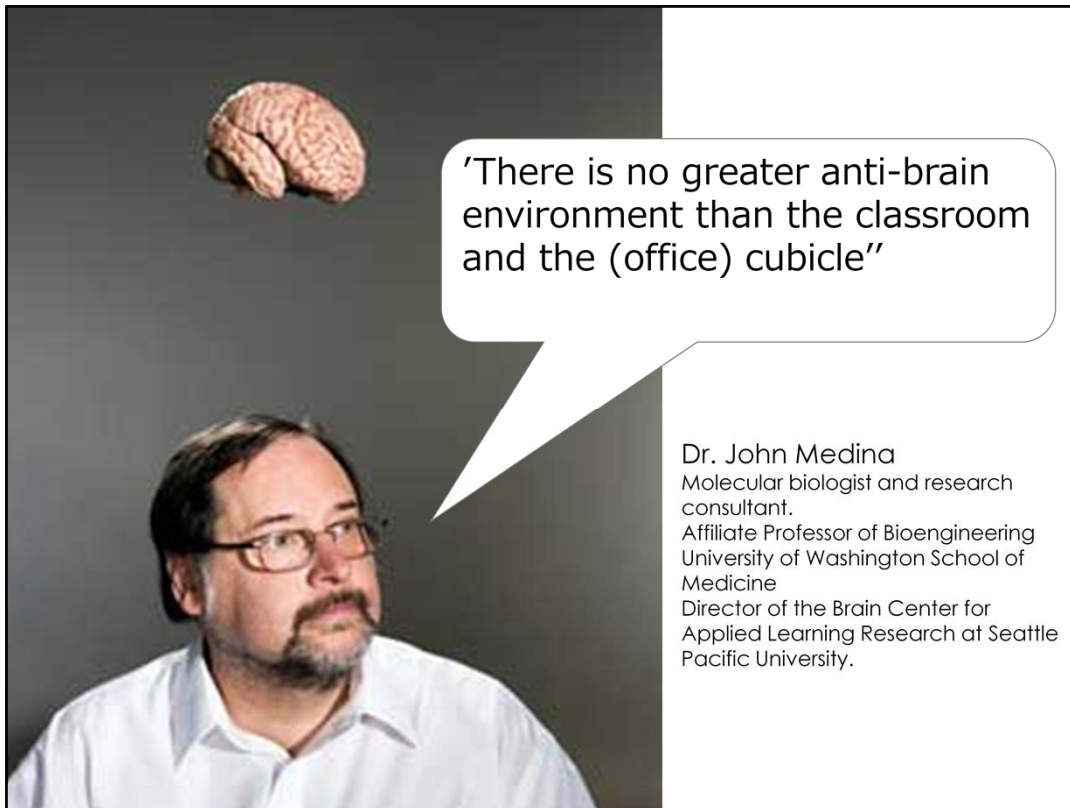
One of the problematic assumptions presented in the traditional school design is that people are all alike and learn in the same way. The professor comments that the present-day knowledge on the learning process is very profound. As he says, it is an obvious fact that brains of people have different specificities or different transmission circuits. So, if such specificities are shown and supported when we design school systems or classrooms in general, that will be natural and the most preferable, the professor insists. Therefore, students must have various opportunities so that their individual preferences or learning styles are met.





According to the professor, the other problematic assumption in our school system is “People are lazy and will try to resist learning.” If we think that way, it can be said that the major job for any teacher is to manage his/her students and keep them study. But, it has been demonstrated that in reality, human beings are driven by the gaining of learning/development and new opportunities and the ability to survive through the evolution of the whole humankind. If so, a question arises. Have we designed a system that brings out motivation of people, or designed a system that destroys natural interests of students or their ability to study new thing? Learning something new is important and can be even regarded as pleasure for humans. However, it is extremely important that the learning process gives students an opportunity to feel the significance and find out their connection with the world. This is because our physiological functions are intrinsically made that way, the professor says.

For this reason, Lene and I are trying to encourage each school to consider how much success they find in their students in the sense of creation of significance and connection, not focusing on why students cannot devote themselves to classes and cannot do well in the present education system.



Another expert, who is also a professor, is Dr. John Medina of the United States. He says that there is no greater anti-brain environment than the classroom. Dr. Medina has had strong interest in how our mind reacts to information and organizes information for many years, and has revealed something interesting about how we can study the best. Design of the human brain is not anything new. The brain design has not changed or grown any new ability since the Stone Age. Therefore, we still have one brain that is designed to solve problems in the unstable outdoor environment, Dr. Medina explains. Solving problems in the outdoor environment – many of them are not present in the traditional classroom. He also emphasizes that every physical exertion such as moving, walking and jumping actually enhances the power of the brain. Why? The approach of constructing many classes and studies while being seated in the classroom or office all day is in fact neither effective nor wise.

L:

I would like to introduce to you one of the schools with which I am pleasingly working and that I have visited.

This is Hellerup Skole, one of the schools shown in the slide.

<<Image 1>>

Occasionally, a phenomenon that rapidly spreads on the Internet occurs. There was a phenomenon called "Ice Bucket Challenge." I'm sure you have heard that. An activity in which the students of this school engaged is called "Mannequin Challenge," and in this activity, all the people stop their motions, and each of them is videoed.

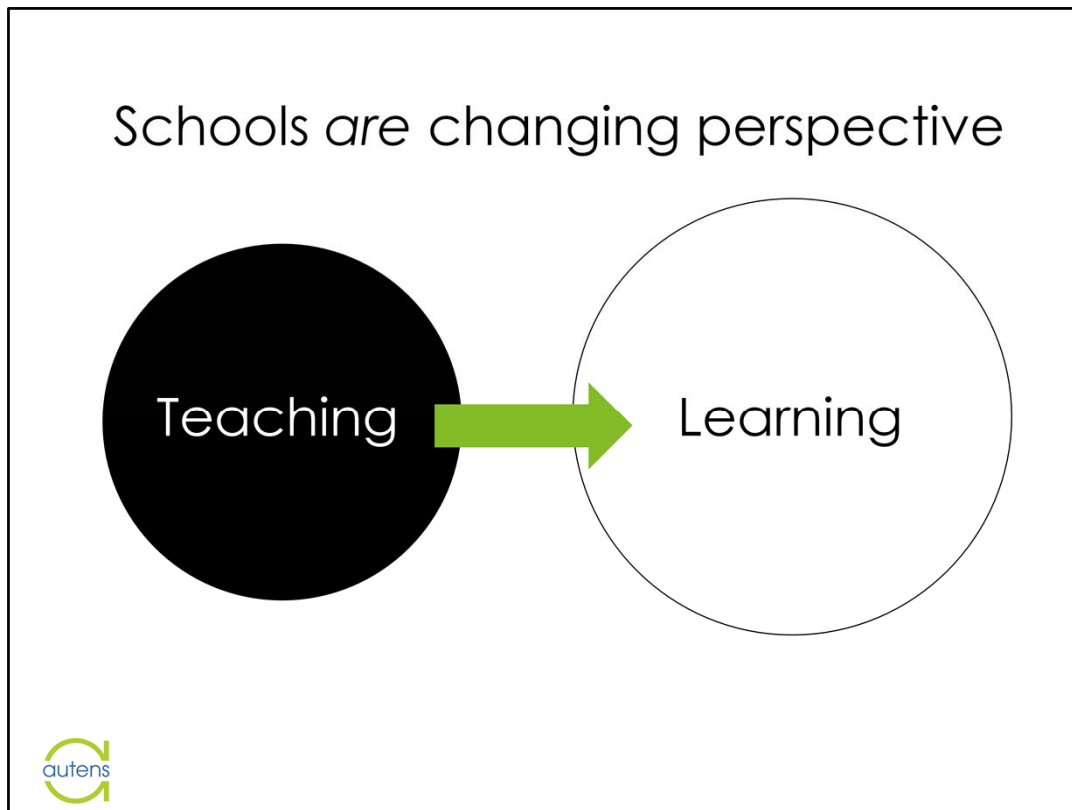
This image tells you what is going on here, how diverse the activities are, and with whom the students are study. You can see that one teacher reads to a group of children, children are studying only in a smaller group, and someone is absorbed in the kitchen. And, you previously saw more teaching styles and a stair hall too. Moreover, you will see children freely move around with self-management given to them to a considerable extent, and adults can respond to them and help the children in a smaller group.

I can say for sure to you that they are lively and cheerful. You see their lockers. They take care of themselves, guide themselves all day, choose what they need, and go to find space where they can study well, space where they can concentrate and space where they can perform collaborative works with peers. This is the only classroom style of this school. Each class has a separated space, and children can make a short presentation of five to ten minutes, or start on studies.

I will also show you other learning environments later. But, I showed this image in order to present what my speech will be like.

Let's take a look inside...





P:

As shown in the animation of Hellerup Skole, schools are changing their viewpoints. I am going to show you what will serve as guidelines or key points for new approaches to education and learning that are conducted in Denmark, Europe and the United States. Let me explain why we and many other important experts feel the need for the world to change, or the need to radically change the attitudes about schools and education. I would like to approach why they talk about teaching less, and talk about learning more.

## WHAT IS THE PURPOSE OF SCHOOL?



To answer that question, it is necessary to examine what the real purpose of school is. There are many answers. Around 200 to 250 years ago, when the first school was established in Denmark, there was only a simple, religious and disciplinary perspective. The royal family and the church wanted to educate the public so that they behave in accordance with the rules of Christianity. Today, the purpose of schools and education is regarded as the means for success in many cases.



Do you know Sir Kenneth Robinson? He is an educational advisor, and explains that the present education has a complex role for individuals. He says that going to school to receive education will accomplish at least four purposes. The first purpose is a personal purpose. Each student must find his/her unique ability, become aware of it, and maintain his/her intrinsic curiosity and creativity. That also bears a cultural viewpoint. Each student attains cultural knowledge, and learns about a tradition and value dominant in the community. He also talks about an economical viewpoint. Each student must achieve financial independence, and attain the ability to contribute to economy and the country. And finally, he points out a specific purpose, or a social purpose in other words. Each student must participate in the community with others, and become able to interact with each other.

## The world our children grow up in



When you think about in what kind of world children are growing – that is really important in working on school development and education –, it is vital to pay close attention to the global trends, latest research, future trends, etc. The purpose of schools varies with this. This is because we need to have students prepare for the present world and the future world in order to succeed, and to survive by overcoming many serious crises that the world may currently be experiencing.

## The world our children grow up in



- Globalisation
- Rapid changing world
- The Internet is still young -> From www, apps, social media to 3D printing, the Internet of things and AI
- Many paths can prove successful
- Connectors – connecting, not providing
- Global crisis
- New opportunities and potentials



Let me talk about children, and several important points that specify the world our students grow up in. They will have to deal with the global economy, industry, market, culture, integration of political decisions, and the world, which is changing the fastest ever in human history. That is the world where the economical position of individuals and the country substantially depend on the education level. In fact, the World Economic Forum predicts that five million jobs will be lost by 2020 since artificial intelligence, robotics, and nanotechnology will replace the need for human workers. But, at the same time, it seems that new jobs will be created, and the abilities to interact with people, share knowledge with them, negotiate with them and cooperate with them will become modern skills for the new economy, apart from highly specialized fields such as computing, mathematics, architect and engineering.





When we discuss why schools, and all education programs, have to change perspectives and reform themselves, we must deal with so-called knowledge explosion or the burning platform. According to the prediction by future-oriented people, up to 65% of the jobs that the so-called contemporary youth “Z” generation will perform have not been in existence yet, and up to 45% of the activities that people currently conduct to receive rewards will be automated using the present technologies.

The President of the Technical University of Denmark explains that the skills that are currently learned in the school days will become obsolete in only five years. Since technological development is progressing at an excessively terrific pace, even the existence of universities is in danger of being replaced by the online platform. This is because students have more autonomy with the online platform in their career development. Therefore, we must change the focus on the method for educating students.



Looking closely to the new skills that students should attain, or the so-called 4<sup>th</sup> industrial revolution, or simply the life in the 21<sup>st</sup> century, it seemed that future-oriented people, and the education professors at Harvard University also agree. You may be surprised to know that part of the skills that we normally develop at preschool classrooms will be highly valued. Soft skills such as sympathy, sharing, collaboration and negotiations will become important.

This is because today’s workplaces require people to move between different roles and projects. The other valued skills are quest, innovation and design solution ability. That is based on elements of novel creative ideas. High abilities in analysis, reflection and critical thinking will be essential. This is because learning new things is considered as a condition for the whole work-life of the “Z” generation. We express that in four Cs: Creativity, Collaboration, Critical-thinking, and Communication.

## What can we learn from research in...



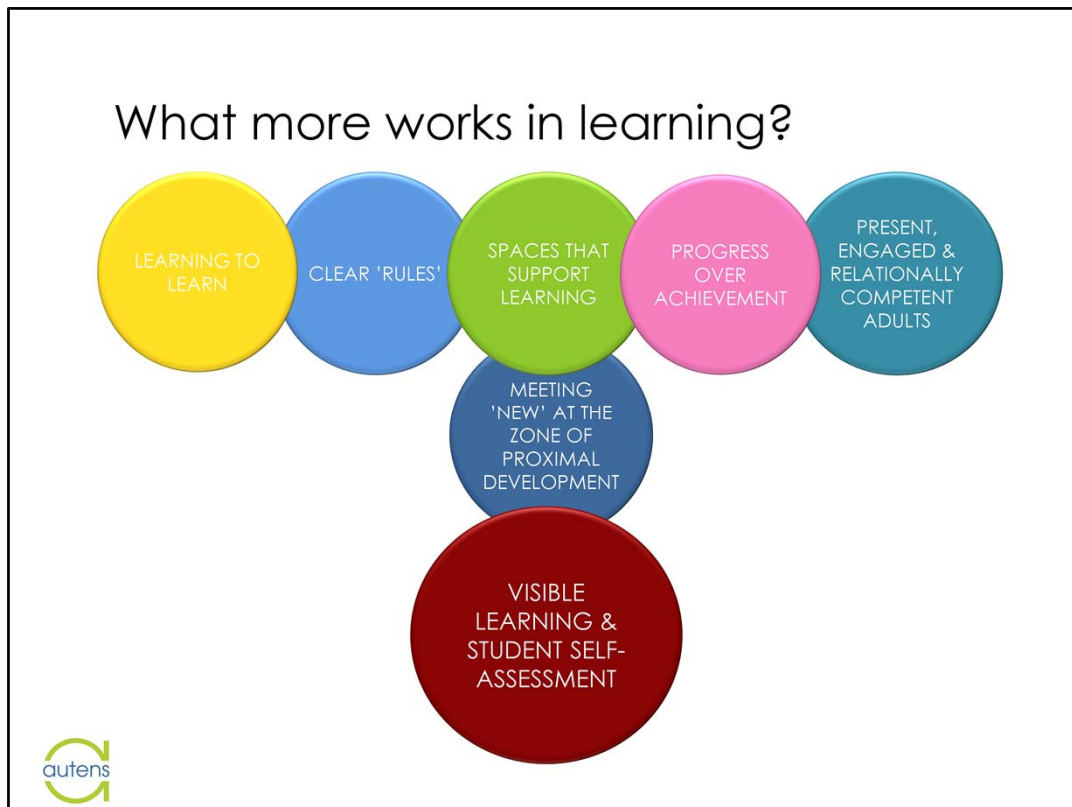
What we are proposing is the fact that the world around us is changing and the change is at a pace that has not been experienced before, and therefore the purpose of schools is changing. If the demand for new skills increases at the same speed as the extinction of other skills, success will become smaller about what are already known, while that for the learning ability will become larger.

What is required here is thinking about how to motivate students, develop them, and have them acquire the desired long-term learning ability, with a new thought and fresh vision. What drives the learning ability, or the learning process of humans in other words, is critical knowledge as you know. Therefore, when Lene and I design both the practice of education and the learning space, we must always use the latest research.



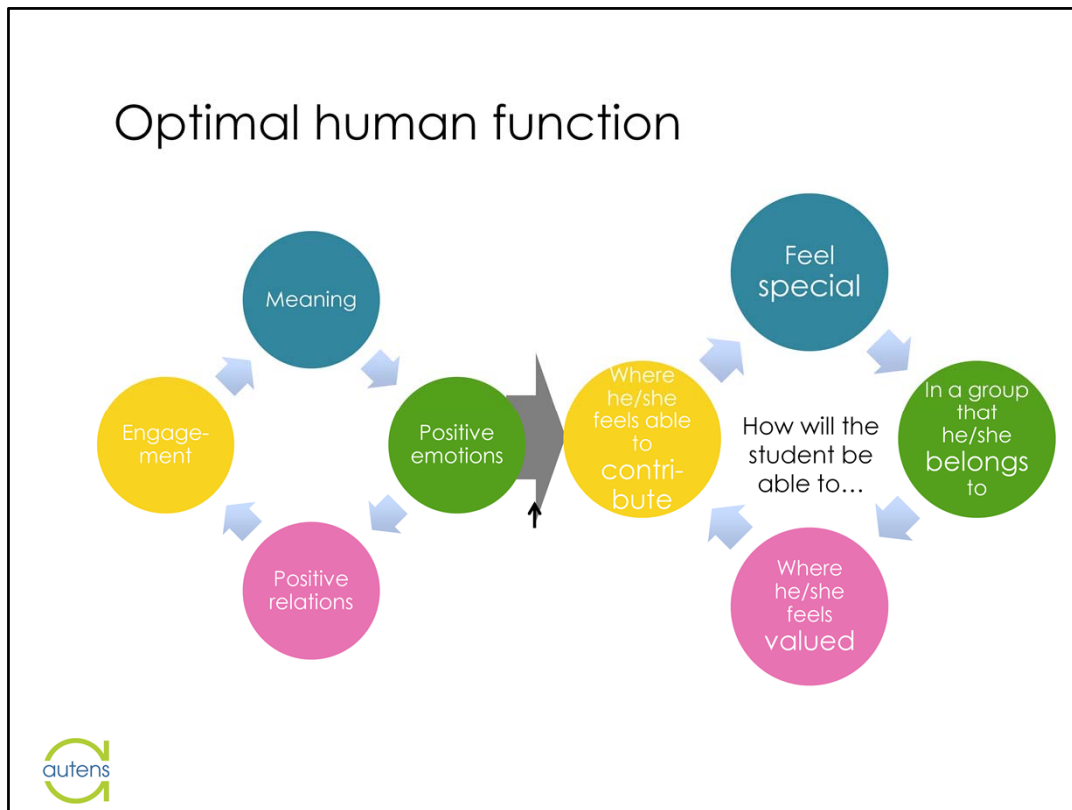
We often examine the nature of learning. In the knowledge we have acquired, students can learn fast and well when the learning activity is creating a fun emotion for the individual, when it is perceived as a meaningful activity, and when the activity gives an opportunity for entering that world.

In addition, according to brain research, a person learns the most effectively when the subject and the fact are connected with a realistic, everyday image and integrated with the real world. Students learn the most effectively when they are active and experimenting in the learning process, or when they have an opportunity to move and exercise. This is because learning occurs not only in the brain but also in the body. Lastly, each brain clearly has uniqueness, and that indicates that there are many learning methods and it is necessary to always consider the viewpoint of the individual.



This slide shows a simple summary of the other currently known bases of what really works in learning. Learning the way of learning, not the truth, fact of knowledge, will continue, and the purpose of all the present education will be the learning ability, which I already talked about. Clear rules and goals, or what to learn the student aims at and how to have the student approach the goal in other words, are consideration that must be shared with the student. To encourage the student to be motivated, concentrate and be independent, we must always place more priority to progress than to achievement, and have students prepare for their life, not for the sake of the industrial society, which is becoming almost extinct. Students understand that they can benefit from the learning process in which their accomplished progresses are appreciated and acknowledged.

So, this needs to be a part of all education. It is truly appropriate and stimulating to compare the previous achievement and the latest result. Therefore, learning new things must always be achievable. But, it must not be too easy or too difficult. In addition, based on a very important and prominent study, it is also known that an adult having interpersonal communication skills and able to involve himself/herself with students in a reliable, positive manner can enhance abilities of students and have them achieve the goals presented in the curriculum of the school.



In summary, any student can benefit from learning in a meaningful environment or a positive atmosphere where he/she can concentrate. And, a student better learns more when the student feels that he/she can be of help in an important way, and, it is very important, when he/she feels that he/she is special and connected to a group. They are facts that must be incorporated in the reform of the school that cultivates students who will be successful in the 21<sup>st</sup> century. To explain what the effective school design is like, you must always have these psychological considerations about very fundamental knowledge on the method for optimizing human functions.

## Schools world-wide are changing



How can we observe these reforms at schools in Denmark and other parts of the world? When we intend to reform education and press it forward to another century, what will be the challenge? And, we currently have the keenest interest in how we can make schools an attractive site of learning.

## From the 20st to the 21st C in education

From passive recipient  
Same way for all  
Learning exact same stuff  
Consumer of knowledge  
Reproduction

To working actively in different ways  
suited to the student in harmony with the  
aims of the group  
Creator of knowledge  
Construction



According to the facts we have seen so far, from a practical viewpoint about which reform is appropriate, it is natural that many school curricula, structural frameworks and education methods have changed, and drastically changed in recent years. Those whom we see at schools range from passive recipients to students who are urged to actively work and address academic problems with various ways. A change through which to establish students as knowledge creators, not as knowledge consumers, is occurring. In other words, reproduction and replication are declining, while creation and innovation are increasing.

At a class, students stand up, talk or talk in a group, and consult the teacher only when it is necessary to adjust or change their learning processes. At the class, the teacher does not make a presentation with the same method for all students. There are few lectures intended for the whole class, and more time is spent for the evaluation of feedback of individuals or a group about works performed at the class.





In addition, a lot of new activities and techniques are also seen in the classroom. Students do not work on homework or deliverables to be read and corrected by the teacher, but in many cases, they are told to test their thoughts or part of presentations through presentations or online works. Of course, this will give students the only possibility to study in the whole classroom, in the whole school, or even beyond the country. This activity stimulates the learning process and actively involves it.

## From the 20st to the 21st C in education

Time of day defines activity  
School weeks all alike  
The level of the student

Targets and content define activity  
School weeks are different  
The progress of the student

Skoleskema for 2. klasse					
	Mandag	Tirsdag	Onsdag	Torsdag	Fredag
8:00 - 8:45	Dansk	Matematik	Billedkunst	Dansk	Dansk
8:50 - 9:35	Dansk	Dansk	Billedkunst	Dansk	Dansk
9:45 - 10:30	Matematik	Matematik	Dansk	Natur/Teknik	Religion
10:50 - 11:35	Musik	Idraet	Dansk	Matematik	Matematik
11:45 - 12:30		Idraet			



Concerning the structural and organizational frameworks of education, many schools are changing the conventional fixed schedule, which is a year-long schedule that shows a grammar class every morning from 8 to 9 a.m., to a different week-long schedule that is planned according to the content of the currently addressed subject. Students understand that they can choose their courses and projects, and not all students in the class have the same schedule depending on the choice. This is new, but will be necessary if the schedule is to be modified to fit with the progress of individual students, or there is any student who actively participates in the preparation or creation of the content of his/her schedule.

## From the 20st to the 21st C in education

Subject divided curriculum

More emphasis on themes, problems etc  
from real life (often cross-disciplinary)

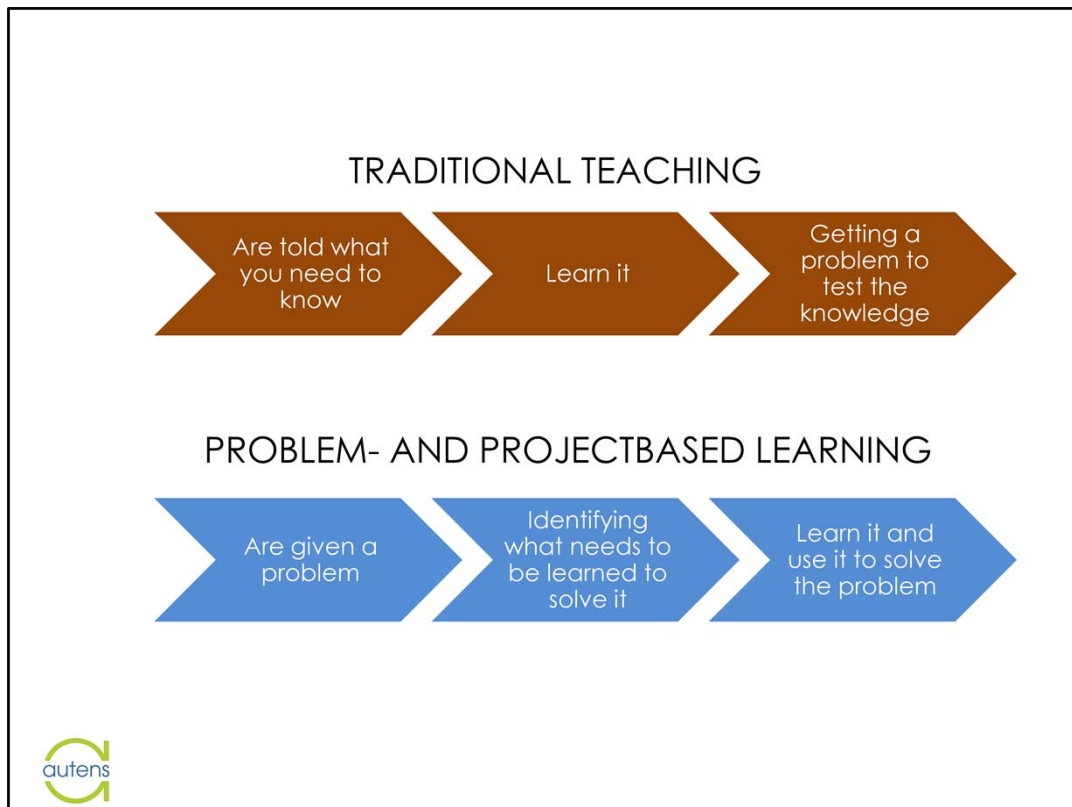
Theoretical assignments

Authentic assignments & working with/in real world



With major change in both the education method and the structural framework, 21<sup>st</sup> century skill approaches to education and schools tend to focus on cross-sectoral themes on a project basis, rather than on curricula by subjects such as mathematics, English and art as seen from the conventional curriculum. Furthermore, issues were formerly simply theory-oriented. However, presently issues are designed so that students work to solve problems with real life, and thus are related to real life.

And, in many cases, students communicate with or are involved with people or companies outside the school in order to receive feedback from the real world. Starting and implementing a project aimed at creating a task for real life, and increasing the well-being level of the school or the community is regarded as an effective means to develop a social entrepreneur spirit and imagination of students.



The content of the ongoing project can be explained as follows. In the conventional education, students are taught what are needed, and tested to prove their knowledge by given fictitious problems. However, in learning on a project basis, students are given a problem by the real world, determine and learn what is needed to solve the problem, and solve the problem using a new skill.

## From the 20st to the 21st C in education

The classroom is the frame  
around almost all learning  
Designed for instruction

Learning indoors, outdoors, using the  
whole school, local area and global collaboration  
Designed for collaboration, immersion,  
creativity & initiative



It is obvious that we should discuss the effective classroom design in relation with this change, which is considered as quite huge, and the demand for a modern, meaningful education system. We understand here that the one-classroom style, which was once the framework of almost all education and learning processes, is being abolished in any way. Spaces that are designed only for instruction have been replaced by far more diversified, unique designs. Students try to achieve various learning styles and individual needs by finding out indoor and outdoor learning spaces. Classrooms are no longer classrooms, but are now spaces for collaboration, concentration and independence.

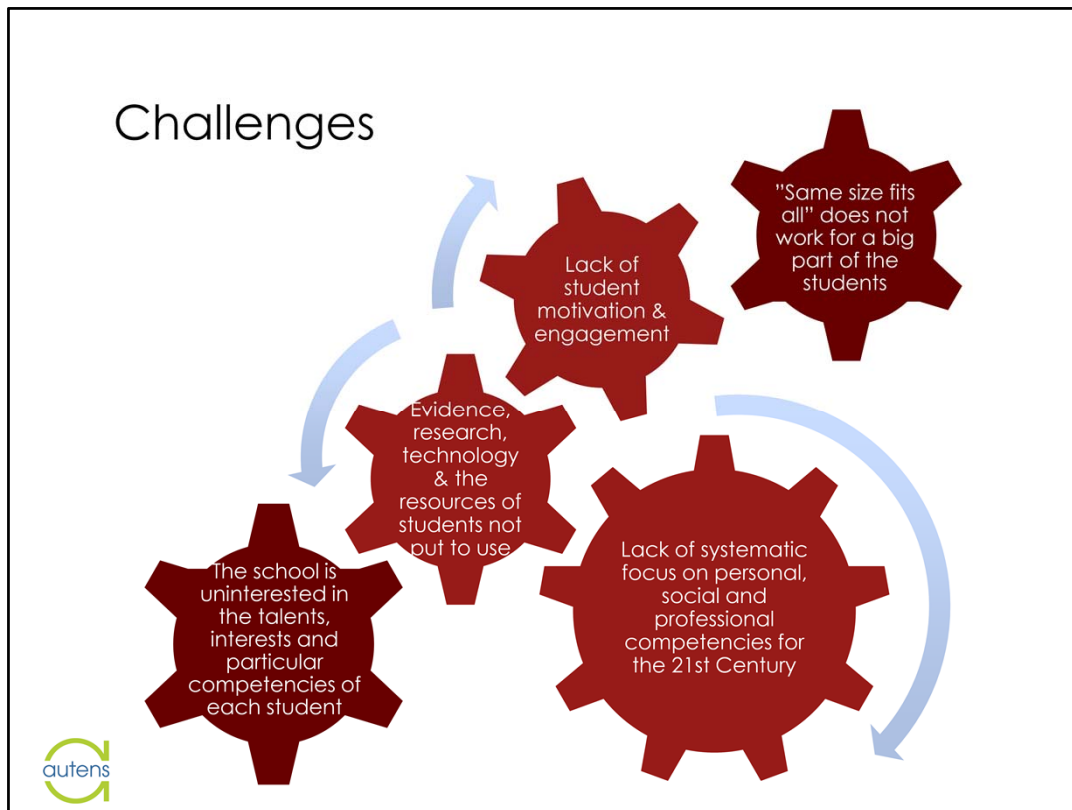
## From the 20st to the 21st C in education

Subject teachers  
behind closed doors  
Class & subject instruction  
'My students'

Teams of teachers working and  
collaborating openly  
Facilitating learning  
Students are a shared responsibility

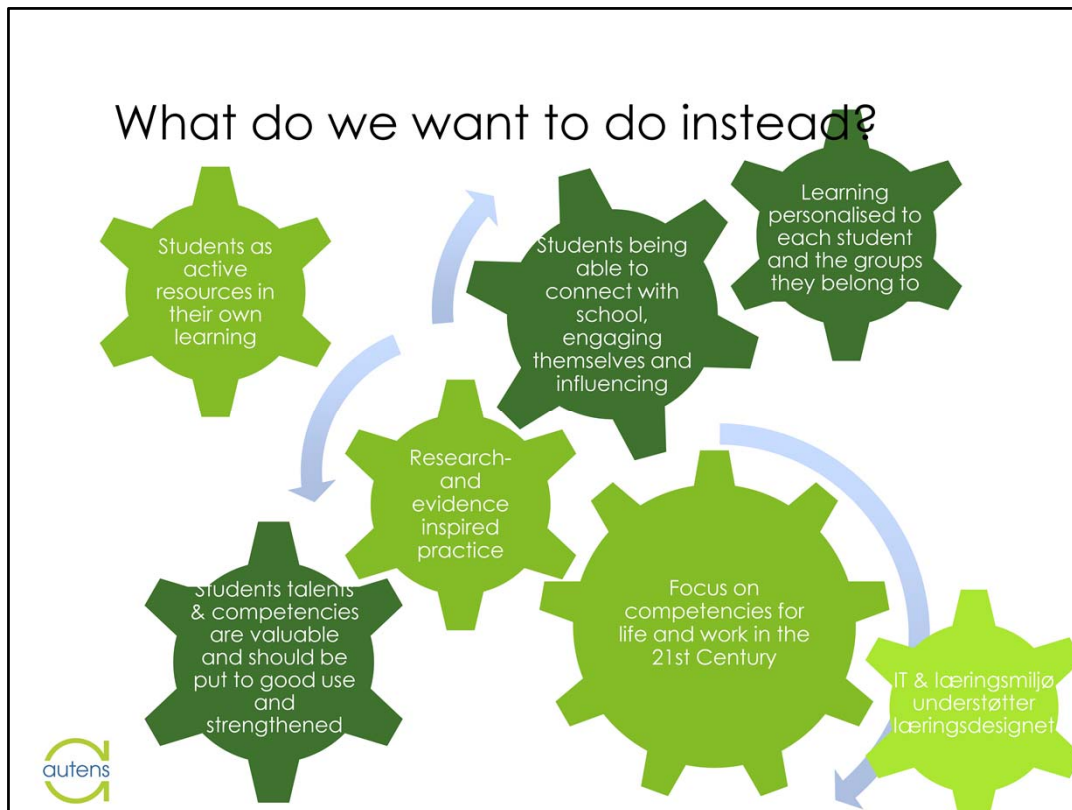


In addition, a room for a team of teachers is commonly seen in modern schools. Most teachers prepare themselves for instructions together. This is because when you give up a school segmented according to subjects, and aim at reforming it to a learning environment on a project basis, it is necessary for teachers to plan facilities in cooperation with each other. Teachers at many innovative schools I have inspected would say: the “class I am in charge of” and the “students I am in charge of.” But now, the whole group of teachers is headed to joint responsibility for classes.



P:

In Denmark, many problems that we share and are common among many schools around the world and many education systems are represented by the fact that any stereotypical approach no longer works, or may have never worked. Alarming lack is seen in motivation or active participation of students. And, students I have spoken with say they have not been involved with schools or learning. Therefore, the passion or gift of each student is sometimes completely unconnected with the school, and given the world in the future, that is probably no longer a good idea. I also often see schools that seem to utilize the findings of research on learning approaches and brain activity very well. Although there may be many problems, these also represent much potential in terms of how schools can be changed.



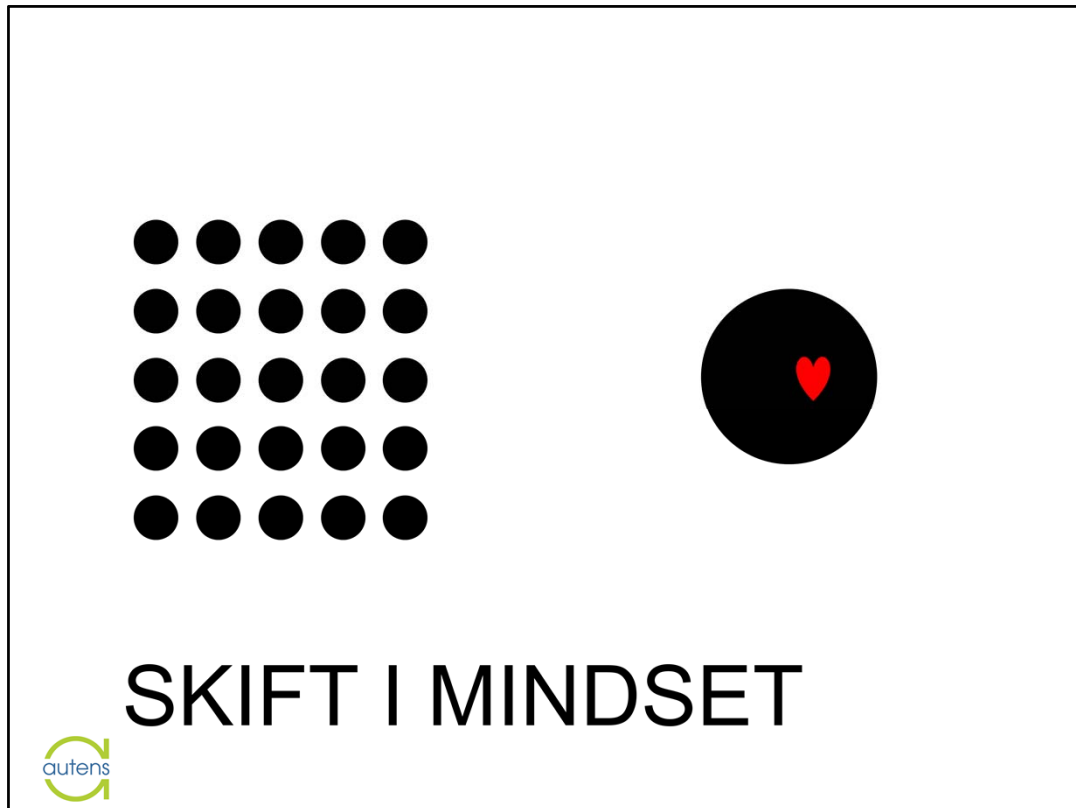
Many schools in Denmark are trying to make schools that are truly meaningful to each student.

We have seen such efforts being made around the world. Research on activities in which students work on favorite projects, such as “passion time” or “passion Friday,” has also been conducted. Such efforts include production of a prototype by a student and starting of a business by a student. We see that the school recognizes the importance and places focus on the abilities required in the 21<sup>st</sup> century. We also see a case where a school designs learning about how students should manage themselves and how they can make remarks in daily school life.

According to research on the working environments of adults in Denmark, it is known that one of the most stressful situations is the person’s inability to control his/her work. And, in fact that is the same situation also for many students. And, students are in a position at which they cannot stop their works by themselves. They are students and must go to school. So, we must make sure to see that.

We intend to work to personalize schools and personalize learning. And, as Prof. Ito said, teachers in Denmark see students very individually. We frequently use a term “personalization.” This is because while we think that communities or groups are really important, we also think that it is important that individuals can find their places where they can feel comfortable in the group.





We now see something like a shift in mindset. This is a shift from a stereoscopic approach in which children are treated as one large group or one large class, to an approach of seeing schools and designing learning from the viewpoint of children and from the viewpoint of humans.

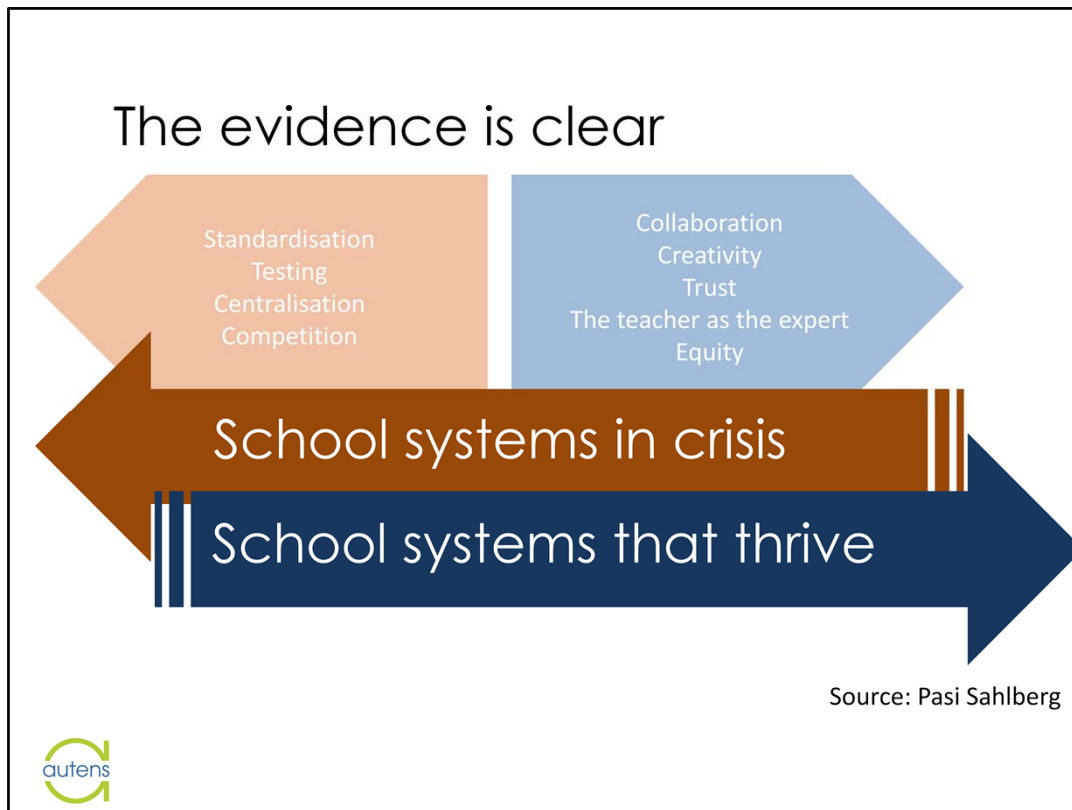
## Two major agendas in education



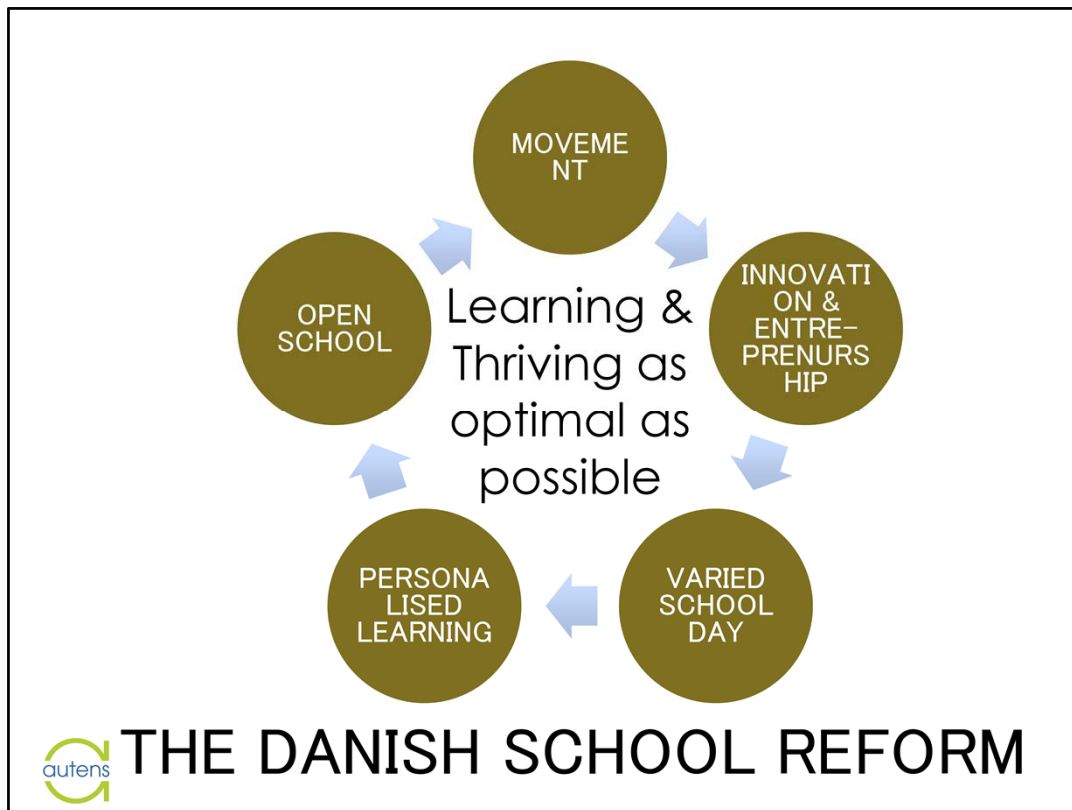
Source: Pasi Sahlberg



There are two major agendas in education from a global viewpoint: standardization and testing-based centralization, and many teachers are struggling with this. As you may know, this is derived from research by a person named Pasi Sahlberg, who is a professor in Finland. Dr. Sahlberg has conveyed how education in Finland has been successful around the world. In addition to these two agendas, there are other agendas such as collaboration, creativity and trust. Teachers are professionals in these, and are entrusted to create a functional learning environment under trust.



According to research, failed or poorly performing school systems are school systems that have much testing and control. By contrast, trust-based school systems seem to have constantly produced good results. That is pleasing.



Of course, this is also something that Denmark has attempted as a nation. It is certain that you cannot avoid the existence of testing or control or the like. But, we really hope to focus on trust. Just a few years ago, the Danish government approved a new reform of schools. Before I show you a lot of photos of schools in Denmark, it is important to know what schools in Denmark need to address and aim at.

First, exercising at schools is becoming very important. Schools need to plan exercising as with learning, and least 45 minutes of exercise are required per day. Although exercising does not have to be done every day, a lot of exercising may be adopted at least one day per week.

Physical education is not the only class for exercise. It is also important for students to move their bodies when learning mathematics and go out to see the real world and explore things. It is known that such activities supply much oxygen to the brain. That is very effective, and increases the ability to concentrate.

Another thing that is much emphasized in school reform is innovation, creativeness or entrepreneurship. Denmark is not a country that has many things to sell, such as production of much gold bullion. There is no petrol under the ground either. We have human resources. That is why the person who came up with Lego could sell that idea to the world. We basically rely on ideas and knowledge, such as pharmaceutical companies for example. Therefore, it is extremely important for us to create a learning environment that helps children become innovators, or entrepreneurs in a broad sense.

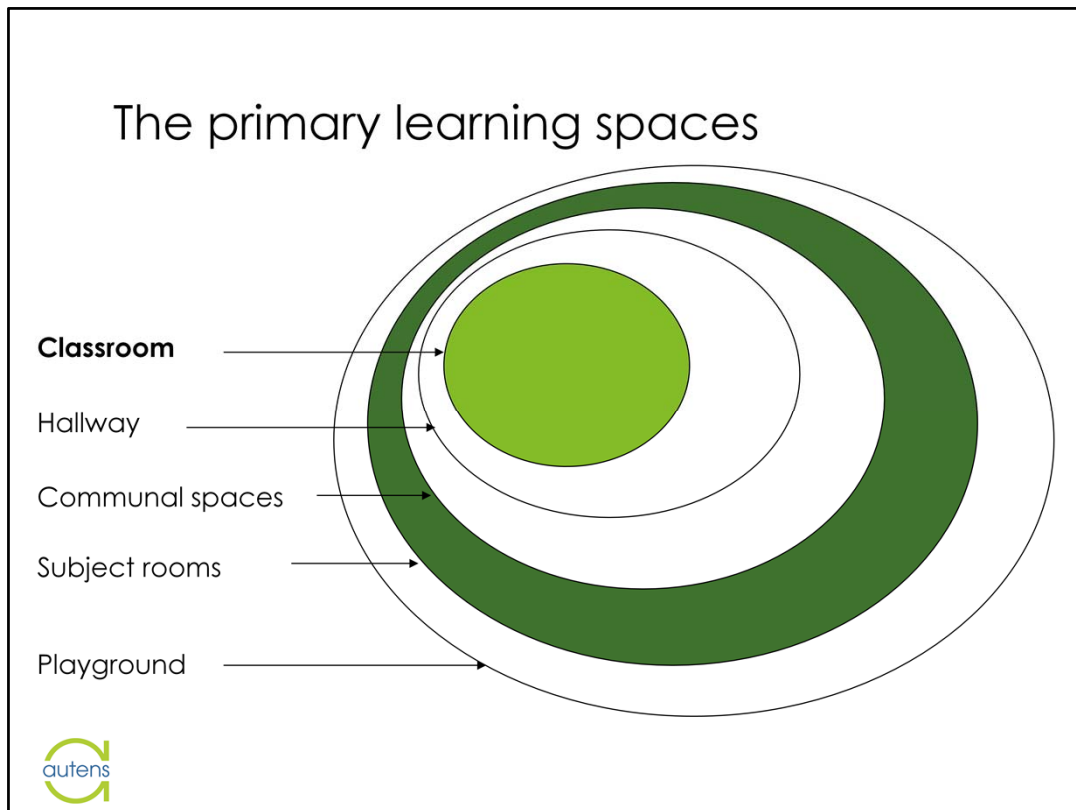
In such a sense, we need to set children free, have them find their ways, support the children's thoughts, and support their collaboration with others. The government also requires diverse schedules to be prepared. You cannot keep children just seated for 40 hours, 30 hours or even more per week without boredom. You can diversify schedules with field trips or the like while incorporating exercises. It is really important for schools to prepare schedules containing interesting and various elements. In such schedules, learning is personalized. It seems that in no ages teachers have assumed such a heavy responsibility. That indicates that teachers must be responsible not only for things that they have taught, but also for what the students have learned and whether or not they have supported the progress of that learning with the best method.

The last important element is an open school. This means applying the approach to real-life problems and the acquired knowledge to the practical context. When designing a school in Denmark or considering how that will be changed, it is important to bear this in mind. That also means that this not only is an issue of school learning, but it also represents "living well."

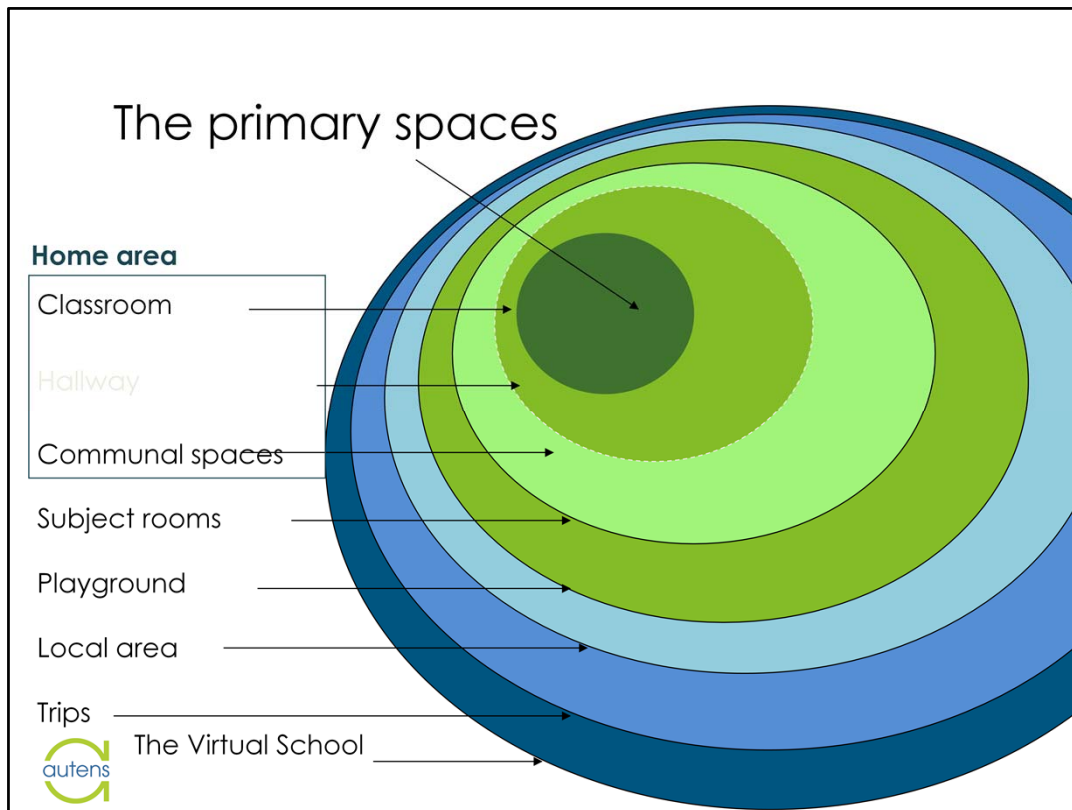
# TRENDS IN DANISH SCHOOL DESIGN - the classroom & beyond



Let's take a look at school designs.



When we looked around the school several years ago, we inspected common classrooms and subject classrooms because they are places where learning was performed. The remaining part of the school was used only when students moved from a classroom to another.



But now, the whole school is used every nook and corner for learning to the extent possible. The hallway is integrated with the learning environment. The communal spaces are not only for a break, but also for group works, collaborations, presentations, etc. The playground is no longer a mere playground, but is also for a place for learning. Therefore, if you actually go to inspect a new school in Denmark and see its outdoor environment, you will see the beginning of a sort of an outdoor learning environment that would not be installed in a conventional classroom.



This photo contains a little bit of lie. In fact this is not a school in Denmark. The photo was taken by my friend in New Zealand. The design of this school provides an image showing that the design is completely different from the 1970s in which schools without partition were hotly debated. Today, we have information and communication technology, which enables you to learn in any place, at any time and with anyone. We no longer need to have students learn with the same group of people forever in the classroom. We can differentiate, and plan with a larger number of more flexible methods.

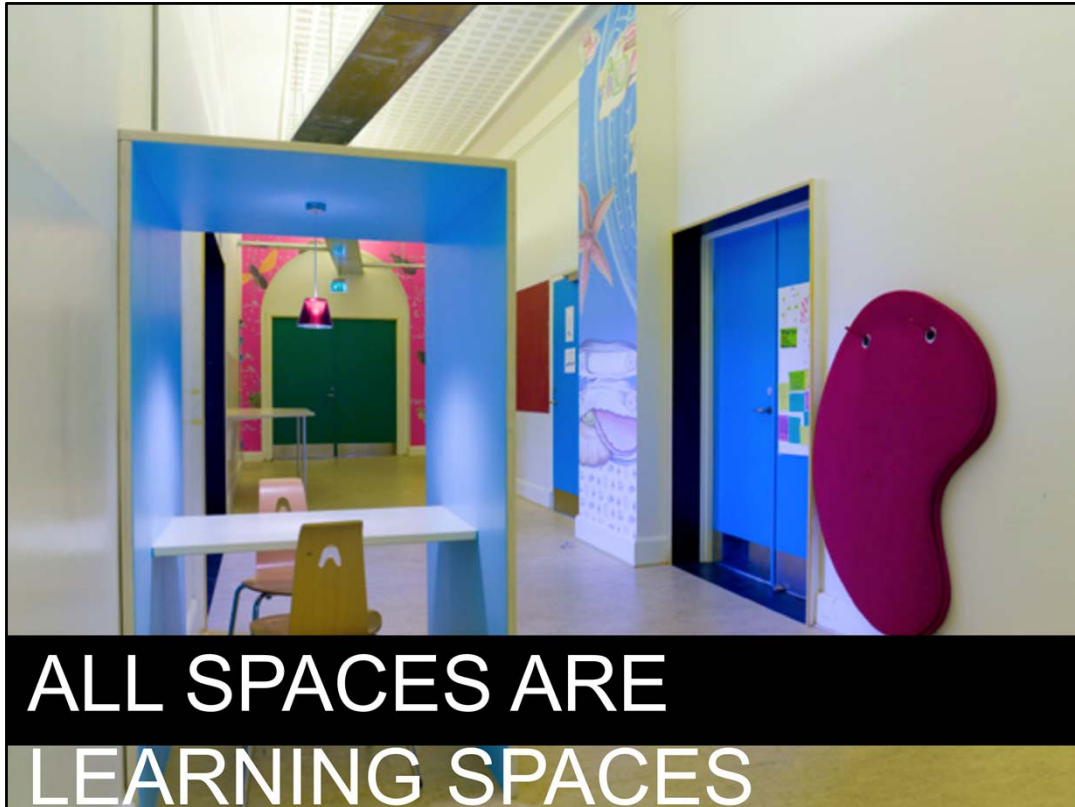




Here, let me show a plan of this classroom. In this classroom, actually two classrooms are combined together. And, you can see a number of small spaces that are varied, very homelike, and attractive to students. Moreover, students can freely move around in accordance with the purpose they are being addressed.



Learning seems to have a very social nature. In fact, classrooms are being reduced, while communal social spaces are expanding. In this space serving as a learning hub, students can collaborate with each other, find out the best way to concentrate, or spend pleasing time. Since it is the best for students to enjoy the school, such a space is built.



## ALL SPACES ARE LEARNING SPACES

This is an example of a school that has classrooms and a hallway. Every nook and cranny of the school is used and transformed to a learning space. Previously, this area was not used other than being cleaned, and is the most quiet place in the school. There are classrooms, and in each of them a teacher is with students. But, if a student comes out to this area, usually nobody is here. So, he/she can find a good environment to study without being distracted by others. This is a really simple space built for concentration. Students can sit, relax themselves, concentrate or read books there.

Another interesting thing is carpets. The teacher instructs the students to take down three to four carpets, and induces them to the carpets by saying they are good places for performing works. Then, surprisingly, the students move to the wall or various places on the floor. Students take the carpets to the staircase, or spread them under or on the table. Sometimes, they do not even spread any of the carpets. Unless anyone is distracted, it is unnecessary to set a rule, and therefore, students can determine learning spaces that are good for them.



## CAVES, NICHEs & HIDING SPACES

In the design of schools in Denmark, what are currently the most attractive and most liked by students are tunnels and other hiding places where they can have peace of mind by for example hiding from adults, sitting with friends, reading books and concentrating. When students spend many hours at the school, they sometimes get very noisy. There are many children, and they may face confrontations sometimes. So, they may not remain good friends with all other students every day. And, it is important that the school has a closed space to which students can retreat or where they can feel comfortable and safe. This is a reading tunnel, and students spend time there by reading books or being with friends. The numbers of interspaces, tunnels and other hiding places are increasing in the design of new schools in Denmark.



This is an example of conversion of a hallway used for group works or the like. This is something like water-less whirlpool spa, and students can hide there, sit in a group, lie down or read books. Students can take down a carpet from the wall and find a comfortable place.

In addition, many of the old schools have windows in high places. I am not sure if this is also found in Japan, but was used to be in Denmark. That is the school designed on a human scale, which I showed you earlier. The reason why the window is installed in such a very high place is for fear that children would look out of window, would become curious about what is happening outside and would not concentrate. So, windows were used to be in high places. But now, we want students to see the world. And, we do not care if children sometimes fall asleep, come back from sleeping and concentrate again.



This is another example of reading tubes. The name of this can be anything. I do not think this needs a name. But, anyway, this uses the space of a hallway very practically, and is very popular among children.



Another important point is that children need to move in the school, and we also need to let them do so. In other words, we need to think about the physical environment. This is a recent school building, and the school was opened in August. This is the main staircase. This staircase is not so large, but has a huge wall for climbing. I have hardly seen an adult using this wall, and I have not tried it either. But, children like the wall very much. The school works as a play lot in a sense, and is a very, very attractive place for children.



This is a photo of the same school, and shows a hallway called a “run.” Since students can run a race with friends in the class, they want to move a lot and become active using their bodies.





Another important point is that they have started to use much space on the floor and walls in order to promote and firmly establish learning. By seeing it every day, students can empirically learn important knowledge. This is a slightly strange room, but students can learn how the colors interact with each other from physical experience. Therefore, students can stand there with the whole class, talk with each other, move around, make questions, and think about how those related to each other.



Learning is based on numbers in some cases. That may be learning of multiplication. Occasions where we see them use the floor space or wall space are increasing at schools in Denmark. In this space, what needs to be learned, or long-lasting knowledge in other words, is embedded on the floor surface.



This photo shows the teacher's room of the Hellerup elementary school. I was in charge of the school. Many people want to make schools a more comfortable place. To achieve that, it is necessary to consider the benefit of not only children, but also adults. This is because what we regard as applicable to learning of children is also applicable to learning of adults very well. As with how to reflect the thinking and learning expected for children, how should we reflect what are desired for teachers? The thought there was to show the teachers that the teachers should also be comfortable while at work. That may help expand the idea. Teachers may come up with an unusual approach. That is what is desired for teachers, and teachers are expected to become a good role model for students. Therefore, we wanted to also create an environment for teachers that is slightly non-traditional and where the teachers can come up with new ideas.



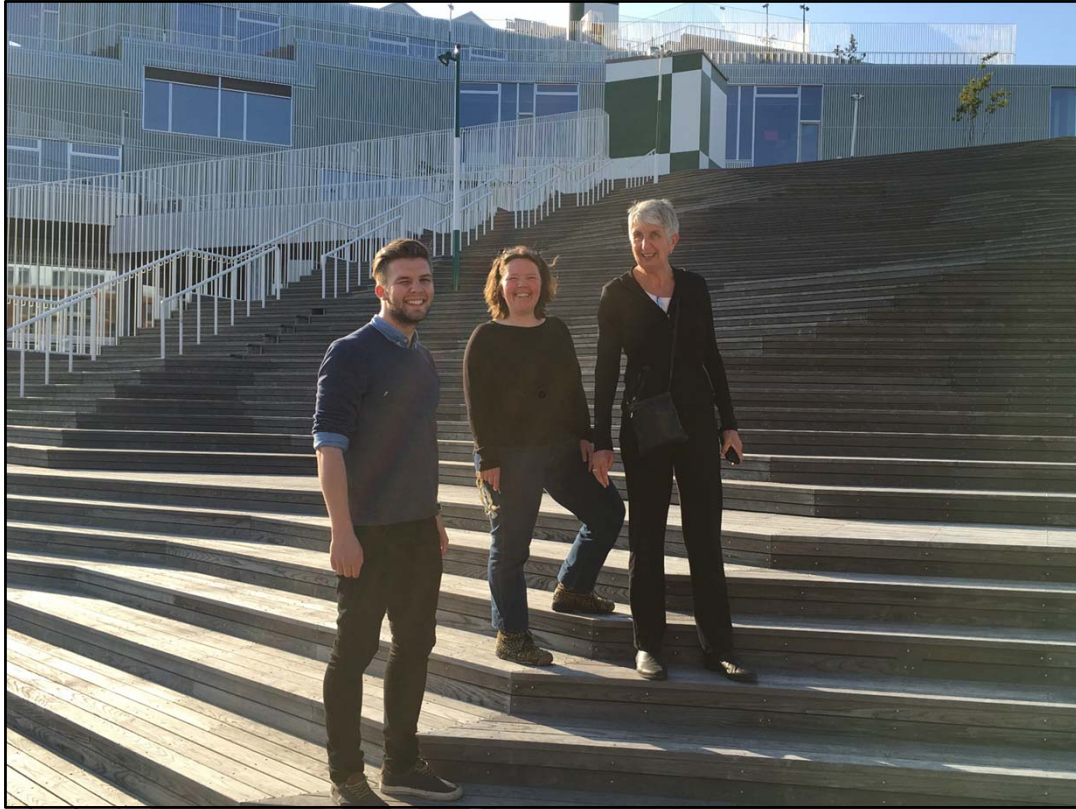
This example represents another case of a classroom with which we were involved, and the facility was a university of education for social workers and educators. This is a place where there are people working with small children. For this facility, we designed very diverse classrooms, instead of making ordinary classrooms. There are a number of cozy comfortable environments where people can sit in different ways, talk and perform works. Image of forests are arranged on the wall. This is because nature affects us. We cannot always go into nature. In addition, not all schools are in an environment that allows you to go out to forests or a sea or into simply beautiful nature. Therefore, we sometimes bring nature inside the room. Instead of arranging nature images on all walls, we arrange small elements in various places. You can have an emotional feeling that nature actually gives there.



This is an example of a splendid school, and I will show you a video of that school later. This is one of the outdoor environments. There are many schools that want to have a place where students can gather and sit around a fireplace, perform works using wood, do many things or experiments, or have an experience.



In fact, last year, a school received an award as the world's best school architecture through voting by World Architecture News members. So, I also brought several photos of that school. Since this is the latest case example of school architect, it is very interesting.



This facility uses not only all indoor spaces. It also uses the whole outdoor area of the school and the entire rooftop. You can walk from the playground all the way to here and there. If you walk to the top, you will find a new playground. That is a different playground for different age groups. Again, even the rooftop of the building is used every nook and cranny for learning.



What are very important and should be mentioned about school architecture in Denmark are staircases. There staircases are seen in all new schools that were built after Hellerup elementary school. This is the new school that received a world award as I mentioned above. The staircase are used as a theater, a place for group works and collaborations, and a place where children ascend and descend or run a race with each other, as well as simply as a motion line along which they move around in the school.





This photo shows the staircase as viewed from a different angle. Staircases are very popular. Whenever I enter a school, I observe with interest what children are doing when they do not attend classes, and what they are doing when adults do not give them instructions. Children sit on desks, or sit on the back corner so that they can overlook the whole room, not in chairs or at desks. They also try to sit in the highest possible place. In a place like a staircase, they climb to a high place, and seem to view the whole field, or the whole scenery or the whole forests. I think that having a preference for such an environment is our basic instinct.



In Denmark, not all things are full of playful mind, unusual and varied. This is also a classroom in Denmark. Since the school is an education university, it is an additional education site. This has a space for about 60 to 80 people. Thus, there are also many conventional classrooms. Such classrooms are efficient in the sense that a lot of people are to be taught at the same time, but are not regarded as very effective. In terms of the learning of knowledge for oneself by acquiring it from someone and then telling it to another person, these classrooms do not function well. To learn knowledge, one must actively work, explore, and integrate the acquired information. We need to develop people who will become innovators or collaborators, and I said there is no alternative but to do so. That is our responsibility. Yet, there are many classrooms and spaces of this type.



By contrast, this example shows a classroom for ninth graders. These children are 14 to 15 years old. This school recently changed from conventional classrooms to these ones. As you can see, a small space is contained in another space. This is a “space in a space,” which is the key phrase. Here is a staircase, but it is not part of the building or the architecture. That currently serves as furniture, and can be installed in a classroom of any type. That is used for instruction here, but the instruction is short. It is impossible to have the students stay here and be seated for 45 minutes. It may be 5 to 10 minutes. That may be a class discussion, or a small group of students are chosen while the other students may be performing works in another place. A soft environment and a hard seat area are combined, but there is also a board that a teacher uses for a lecture. Students may also use the board almost equally for presentation of projects or the like.

The important suggestion in this example is that the best method for doing some work is maintaining diversity, making a change, and maintaining the brain in a lively state all day by standing up and moving around, collaborating with various people, and practicing various things and skills.

FOUR EXAMPLES  
- TWO NEW(ER) SCHOOLS  
& TWO OLD SCHOOLS



Let's take a look at a few examples of relatively new schools and two old schools.



This school was the best school selected in annual voting in Denmark last year. The school is completely different from other schools I have seen. This is doubtlessly innovative among school architectures in Denmark.

This school has many places where children can exercise and move. I am not talking about a gymnasium. I am talking about the place as shown in the photo. As you walk along the hallway, you will find a rope on which students can dangle and a place where they can climb. There is stuff with which students can jump on one leg while exercising multiplication on the floor. These new ideas tell us something. We are currently working on several school projects, and we understand that this school has tremendous influence and inspires other schools. This is because many schools presently want to make a lot of places where their students can move around. We intend to install many places in which children can hide from adults, such as reading tunnels. Let's take a look at various such learning environments that far exceed classrooms.



This photo shows a high school called Ørestad Gymnasium. This high school is often said to be one of the most advanced schools in the world. I do not know if that is true. But, this is definitely a school that has inspired many people, and a lot of people visit the school every year.

In this school, an open learning space and classrooms are combined. But, not all classes have classrooms. Lessons can be reserved to be started either in a classroom or in the open learning space. There is also a place for students, and in that space they can communicate with classmates while leaning against and lying on a cushioned chair or reading books. There are tables here and there for groups, though they are not visible here.

The roles of teachers at such a school are completely different from those of teachers at conventional schools. In the previous lecture, the doctor mentioned this in his talk about open-plan schools in Japan. How did you feel when you heard “do not talk” or “do not stand up” ...? Well, the keyword is “organize” (successfully coordinating, helping). We should help children organize. Instead of doing something for children, we should make preparations for their learning. By helping them become the leader of their learning, you can discreetly become their leader.



You can conduct a small-scale lecture or presentation.

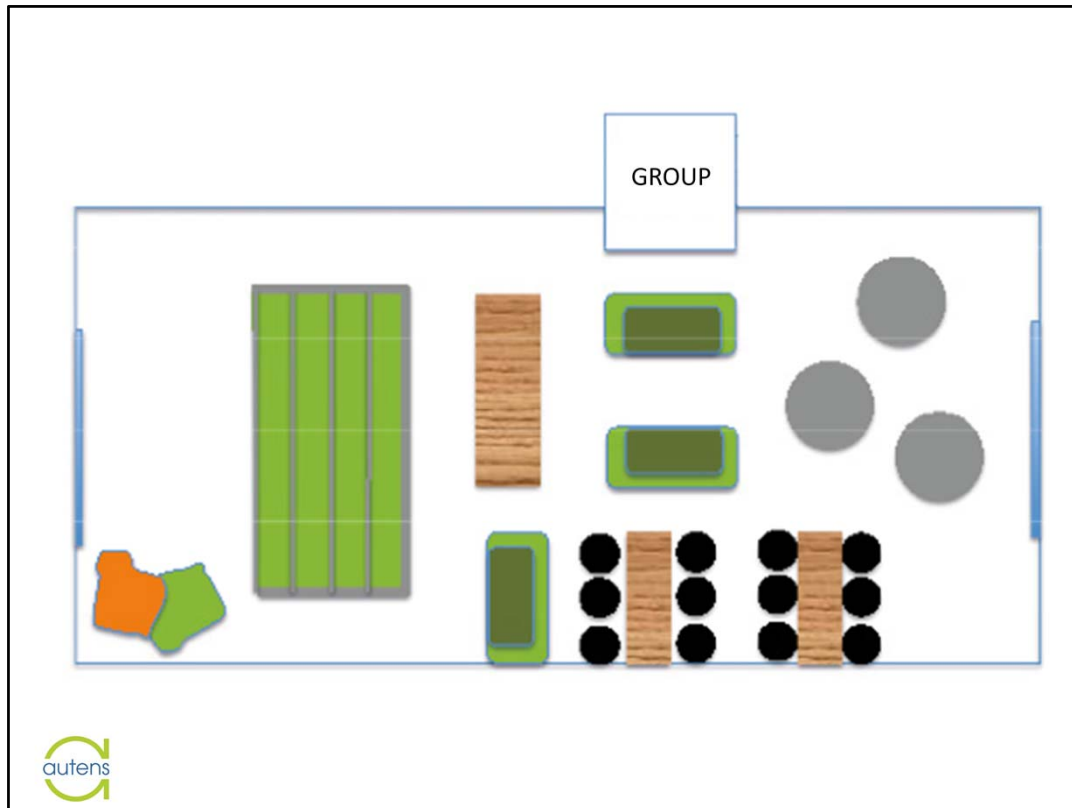


This slide shows a very symbolic staircase of this school. And I sometimes feel from these beautiful photos that the school is delivering a message. This school places a major focus on the mass media and information and communication technology, and it also has a TV studio and a lot of devices that promote creativity of young people.





Scapa School is also a Swedish school I consider as worth a look. I showed you this photo earlier, and I think that is used also in this flyer.



This is a simple layout. It tells us how the learning space is composed of.

It is very simple. But, it originally consisted of two classrooms, and later the wall was removed to have a bigger room. And, now movable furniture is placed, group tables are provided, and a whiteboard is here. You can also hold a lecture here. A lecture can be held also in the opposite section. This is well organized using the brain. It is also equipped with couches, sofas and tables. If you want to conduct a creative activity, you should use such things.

This school is 100% digitized. With these, students lead their learnings by themselves. They choose tasks using their iPad.

For example, each student can select what he/she is going to learn now, such as Swedish and mathematics. I wish if I could do so. Since I am proceeding with two projects concurrently, I like such a learning method. The teacher can flexibly respond to change such as prioritizing this using a partition. Students can also do the same.



This space for lectures is stepped, and two classes are listening to one lesson. Or, an activity in a smaller group can also be performed. And, there is a large cave at the back, and students can lie flat and have a chat there.

I inspected this place for one day, and observed children take their iPad into the cave and work on their projects with intense concentration. They submitted the project using iPad, and the teacher made comments and gave feedback also using iPad. The teacher and the students did not see each other, but the learning was proceeding.



These are more images of the school. The facilities here are also varied, full of playful mind, and have bright colors.



## HØSTERKØB SKOLE, RUDERSDAL

This is a local school and it is very small. They phoned me several years ago. “Ms. Lene, we have a slight problem. All fifth graders sit in a temporary building. But, the building has to be demolished soon. The students will lose the place to stay because the old school building has no surplus space.” Then, as I went there, I found that the school had much space. But, they could not see the space. That is because they have a preoccupation of having to use classrooms in a certain way. So, a space can be created by freeing various spaces.

They also said: “We have another major problem. Due to the lack of space, we cannot do learning that we want to do.” I said: “I understand. We will also take care of it.” Their third comment was: “But, we do not have a budget.” I responded: “Then, we will see what we can with the existing resource.”

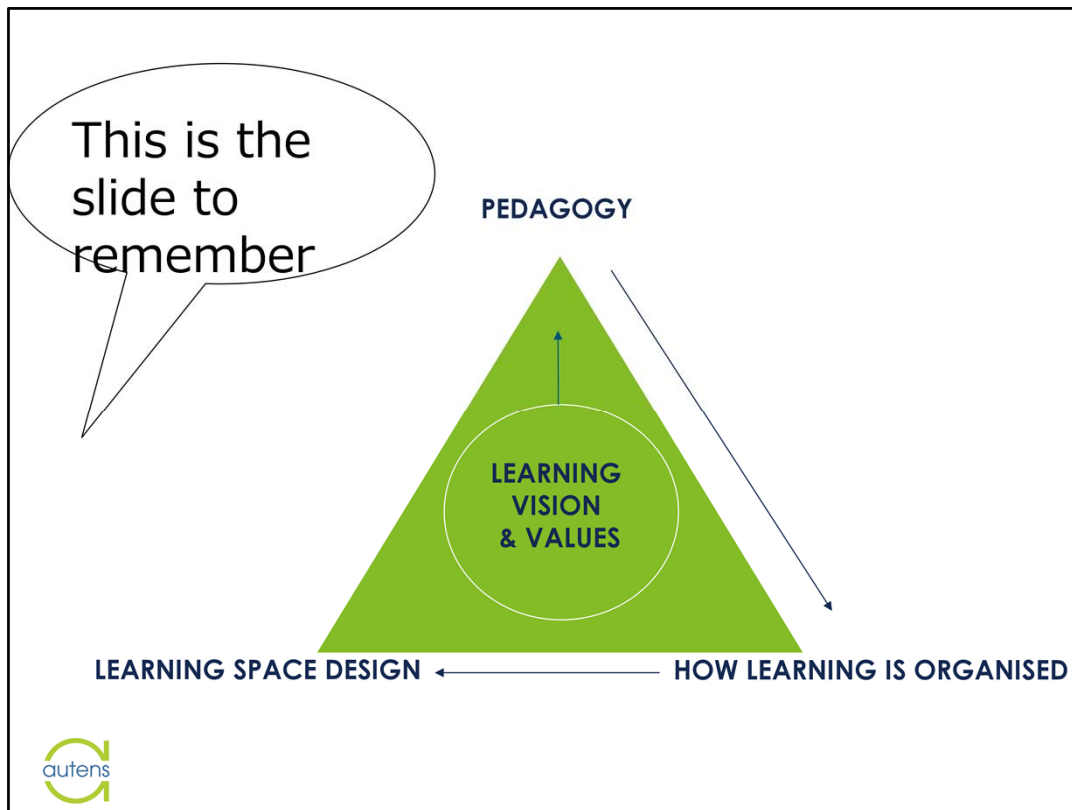
As we actually tried, we successfully change the learning culture completely. We spent little money. That is not a question of whether or not the city invests in the school, and question of mindset. What you need is the will to change, and the courage to practice what you believe is correct. I am going to show you a 7 to 8 minute video.

<<Image 2>>

This is a school that was completed at a very low budget with a set of furniture purchased at IKEA. I work at schools across Denmark and schools around the world. Such approaches attract sympathy of teachers. They will understand what are needed at the school today. Until then, there were a lot of students feeling uncomfortable at a conventional school, and there was a problem of how to overcome that. Energy of the teachers was applied to these students, and did not reach other students. I infer that in a conventional education space, it was very difficult to bring such children together without rejecting them. To eliminate such problems, you should give an alternative to all children. For example, some student wants to go to this station and do different things, or some student does not want to be seated with a person sitting next to his/her. Such things occur. And they have such trouble. It is important to take these into mind in responding to the request.

Children were talking in the video. The teacher said (that they were) quiet. That is an interesting comment. Teachers normally ask students to be quiet. But, children feel adults are fussier, because the natural flow of their learning is distracted.

Another boy said: “I used to sit at a small desk, and a person sitting next to me was very close to me. If I moved my arm a little, it would hit the person.” In such circumstances, children cannot concentrate on study. But now, the boy can freely move around, is not distracted by others, and freely move his arm. I found such a comment really interesting. I can learn various things by seeing what children are actually doing, and hearing what they are saying.



This is a very important model. If you design the space of a school, these three elements are important.

First, it is important that the teacher and the students create a learning space together. The question is not which of a black sofa or a red sofa is better. It should be what value you find in learning, what vision you have, what your students should learn, what will be needed in the future, what kind of education is needed, and what kind of training is needed. They will become the core, and I think this is the concept that should lead architecture.

If that is properly established, teachers will also be sympathetic to it, and an education method will be considered next. Questions, such as whether this is a project-based learning, and what kind of thing you want the student to see, should be thoroughly examined. Then, it is important to question who will perform the activity with whom and when. Concerning this, in Denmark, the average proportion is 11 students per teacher. If I say that, some teachers say: "That can't be true. One class has 25 students at our school." But, if all statistics are calculated, the average proportion is 11 students per teacher. So, it is necessary to actually examine with whom your time is used, and when and how it is used, for understanding. If you follow these processes, it will be very easy to design the learning space. That will become your narrative. It will be a narrative that reflects the school's vision. So, that will be a tool for learning.

The learning space can be visualized as a Swiss army knife. A Swiss army knife contains various tools. So, one hand can hold 10 tools. It means that a classroom contains various learning spaces. Students can easily move from one space to the next space. They can perform independent activities there. And, they can express that, for example, a certain activity needs such support. In such a sense, it is necessary for school teachers to consider the learning space as a space to conduct education under the education philosophy instead of creating such space by designers coming from outside. Therefore, if you intend to perform a joint work with a school, you should instill these thoughts and have the teachers understand that this space is part of learning and one of the learning tools. Since we are born to enjoy learning, I think it is necessary to value it, have the school convey this to students, and promote such learning.



This is the last slide. Since I am honored to be here, I would like to share one more thing with you.

Recently, we completed the design of a new subject area of a school in Denmark. This is an area for art, craftwork and design, and also serves as a common space. If you want to visit this space we designed, you can actually walk around in the school in virtual reality. I have two virtual reality devices here, but it seems two are not enough. The same device is published on our website. Our company's name is Autens. Since I am from Denmark, the address is "autens.dk/japan." The site has a link through which you can participate in a virtual tour on your notebook computer or by wearing a VR goggle. I hope you will visit the site, and get an idea that would help our next project, or a consideration that would help design the learning space. Thank you for your attention.





# **Aiming for an active education space by examining classroom environments in the past, present and future**



**Satoru Nagasawa**  
**Professor Emeritus, Toyo University**

FY2016 National Institute for Educational Policy Research,  
Seminar on Educational Facility Research  
“What is Effective Classroom Design?”  
-Exchange of Knowledge between Denmark and Japan-

Aiming for an active education space by  
examining classroom environments in the  
past, present, and future

2017.1.24

Satoru Nagasawa

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Research

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Thank you for your kind introduction.

We have just heard very interesting presentations on Danish approaches to education and educational spaces from the two speakers from Denmark and Professor Ito. I will attempt to link the Danish schools introduced by the three speakers to Japanese schools and examine how these concepts can be adopted here.

Taking the theme “Aiming for an active education space by examining classroom environments in the past, present and future”, I will use examples to consider how changes in Japanese schools have developed to the present. Professionally, I am an architectural planner and design specialist and I have been involved in research on school architecture and actual school construction for more than 40 years. During that time, Japanese school education and school architecture have changed greatly together in parallel. I am very happy to have been involved in this process. “Approaching education from classroom spaces” is the subject of this presentation. My doctoral research addressed approaches to school architectural planning to accommodate opening styles of education starting with using the then standard design school buildings for team teaching and schools transitioning to flexible education. Then for the first schools with open spaces, I investigated how education should develop to utilize these spaces. Since then, I have involved in considering the role of school buildings in education.

## Points to consider when examining educational facilities/environments

- Architecture is violence
- Architecture can create order
  
- Architectural facilities are the greatest educational tool
- “We shape our buildings, and afterwards, our buildings shape us.” (Churchill)
- Thinking about architecture is an ideal time to think about the connection between education and region
- Creating schools that link education and facilities, schools and regions
  
- Schools are built upon outlooks
- Freeing oneself from fixed ideas leads to a need for, and the creation of, new learning areas
  
- It is important to have a planning process that shares perspectives
- Creating schools that nourish the dreams of children, teachers, and the region
- Creating schools brings about joy

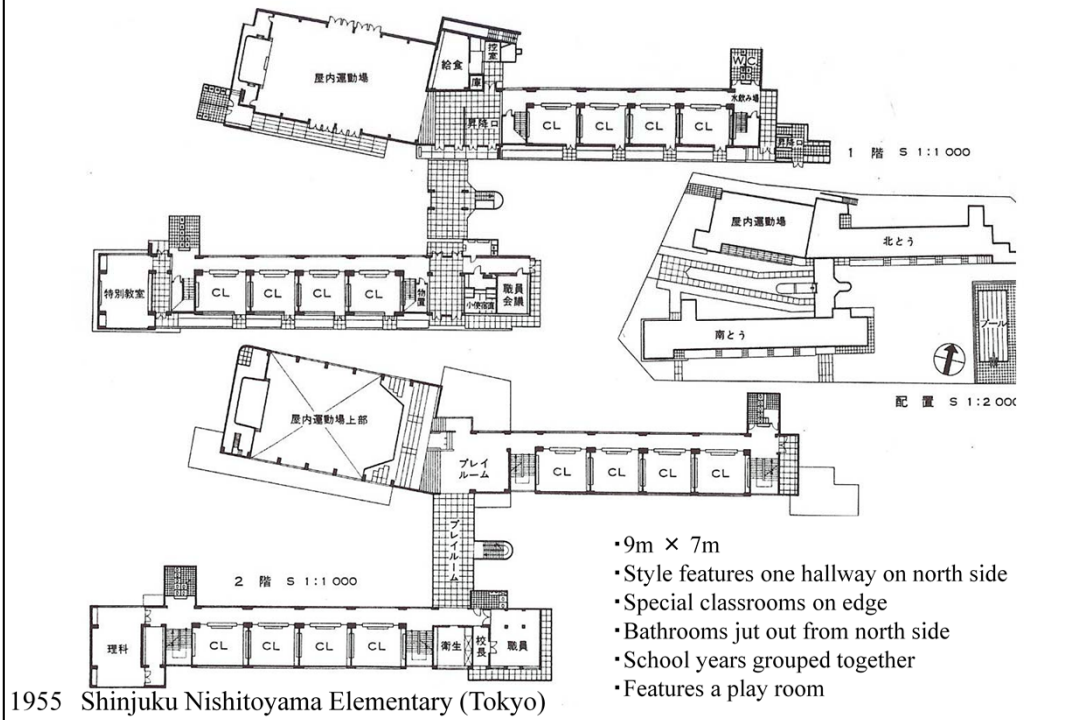
Plans for creating schools are developed through cumulative discussions with educators. Initially, teachers often ask me what they should talk about and whether their opinions will really be considered. When conducting such discussion, I often first say, “Architecture is violence”.

Educators often said that “education is people” and the subject was how to teach assuming uniform schools and closed classroom spaces. There didn’t seem to be much interest in facilities at the time. However, architecture has the power of violence in terms of not being able to adopt a given educational method or not being able to change teaching methods when one had the idea or the power to stop these ideas. It was initially necessary to convince teachers to be aware of this issue. On the other hand, spaces made to address objectives help schools to achieve educational objectives smoothly and foster the birth of new ideas. Next, I stated at such times that facilities have the power to move behavior towards goals.

Facilities or classroom spaces are the ultimate educational tool. However, these cannot be simply obtained and I also sometimes saw failure to think about this. Opportunities to consider facilities including remodeling are unique opportunities for concerned parties to consider education as well as the relationship of schools to their regions. Not only facilities but also movements to reform education and schools are born. While buildings built on the ground, schools are built on their outlooks towards children, education and schools. Freeing oneself from fixed ideas leads to the need for, and creation of, new learning areas. It is important for everyone to have the opportunity to participate in a planning process to share such perspectives. This is creating schools that nourish the dreams of children, teachers and the region. Joy was one of the keywords on a previous slide; I want to create schools with joy, schools must be created with joy. When the facility or space is completed, this becomes the driving forces for giving birth to new education that utilizes that space.

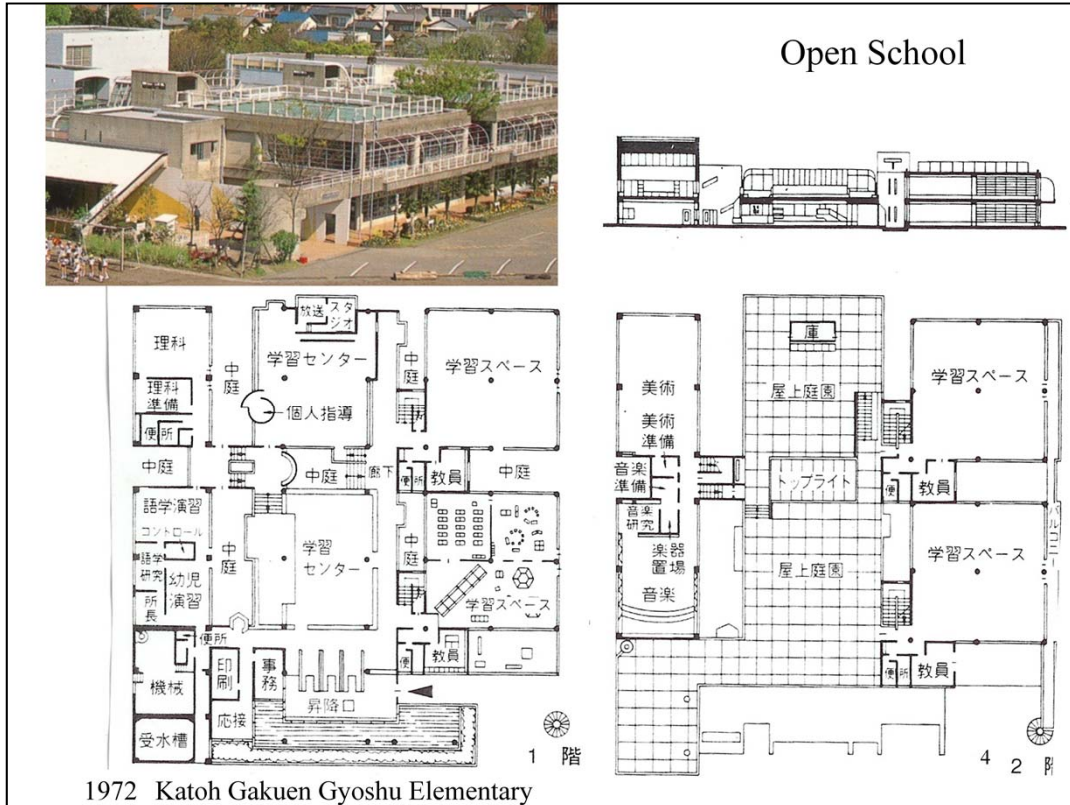
## Past

### Standard Design for Reinforced Concrete School Buildings



Here, from the past, present and future, I would like to start by discussing the “past”.

After the war, reinforced concrete school buildings were the standard design for classrooms and these were built widely. This slide shows a model school at the start. This design made possible to construct schools in large numbers. It can be said that uniform school architecture was promoted. This type of school began to change during the 1970s. At that time, words like students that were not able to keep up or were left behind due to the harmful effect of uniform classes began to be heard. From the mid seventies the phenomenon of school violence occurred nationwide. I felt that this was a rebellion by children against the approach to school education up to that time.

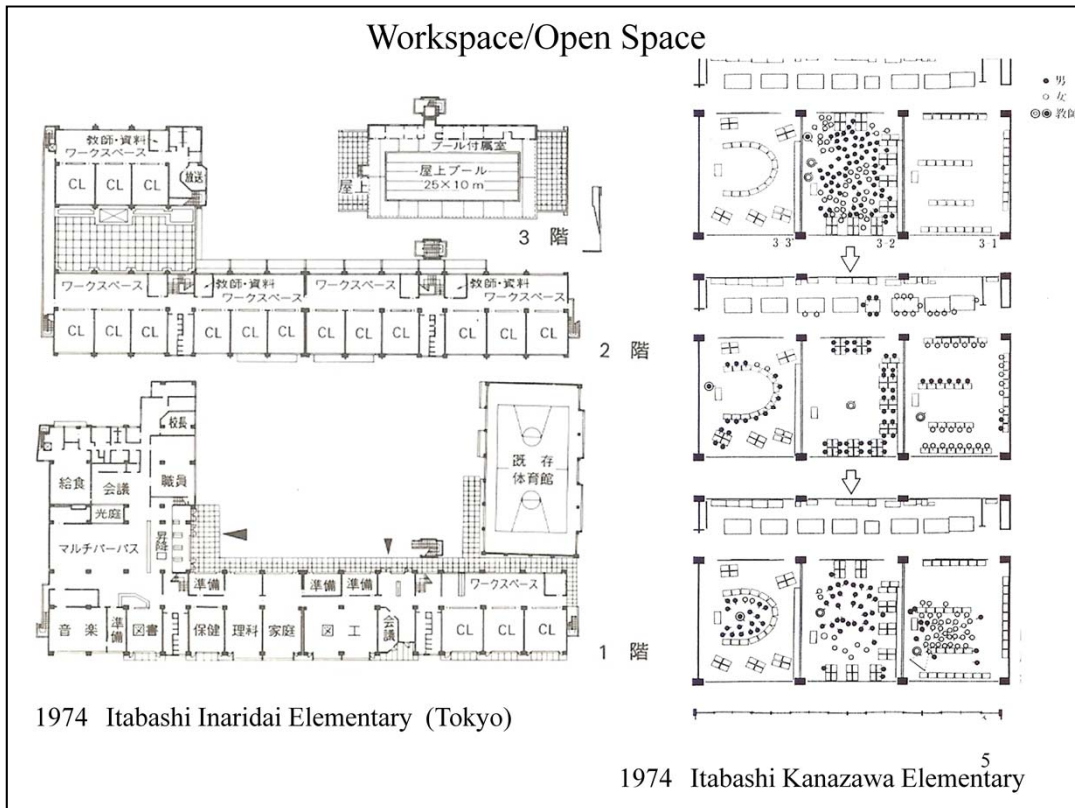


1972 Katoh Gakuen Gyoshu Elementary

To address these issues of uniform one sided education, educational reforms including collaborative teaching organization, team teaching, open education by the 21<sup>st</sup> Century Education Group and others that have sought to help each student grow and value the differences between individuals are seen in education practices in various regions.

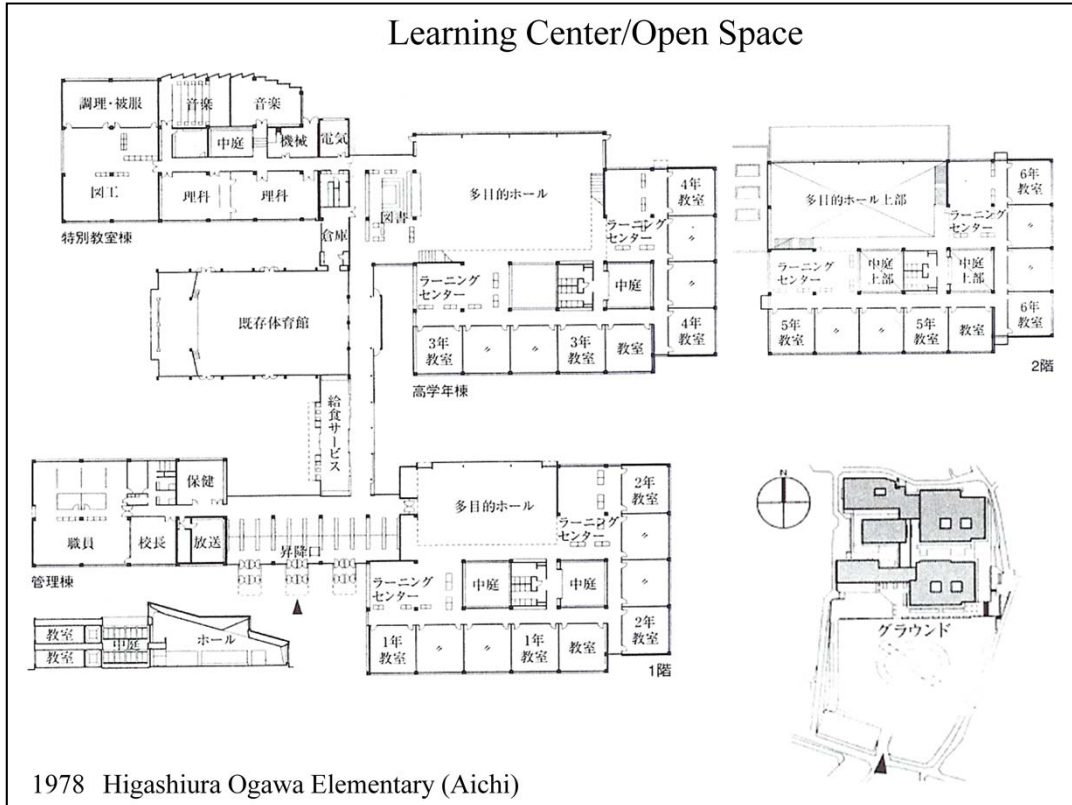
When the city of Sapporo proposed a standard central corridor type design for the Okadama primary school, the teachers reconsidered the school to meet their approach to education. Rather than a school building with a line of closed classrooms, they wanted a space with greater freedom. Room partitions were changed to accordion walls while one classroom was carpeted to allow a freer approach to learning. The teachers created their desired space through their efforts and this school building allowed putting flexible learning groups and open education into practice, attracting nationwide attention.

With these movements as a background, open schools became a keyword for school facility planning; large changes began from both education and facilities sides. At that time, open schools in America had a large impact especially on the facilities side as well as the education side. Katoh Gakuen Elementary School that was completed in 1972 became the teacher for open style and open schools for school architecture in Japan. The architect Fumihiko Maki's proposal realized an open school in Japan. This school was built with the objective of being an open school and at the time, nearly 2000 came from around the country to an open house. I've heard that there were nearly 10,000 visitors annually. The 16 m square open classrooms and the spacious central media center are colorful spaces. The sight of children gathering together to learn freely was said to have been stimulating for visitors. However, this plan that dismantled classrooms as such did not appear again in Japan. This can be said to have been the first and last.



When education and architecture start moving to seek transformation, characteristically, facilities move ahead of education. The planning method at that point is to propose a plan that retains conventional classrooms while combining open space with classrooms to have flexibility for the future. The background to this is one aspect of Japan educational culture that values the class group; I think that this can be called a tradition of education.

This slide shows the former Inaridai Elementary School in Itabashi-ku, Tokyo that in 1974 became the first example of such open space or the example of Kanazawa Elementary School in Itabashi-ku. The architectural plans were the proposal of a researcher and in one sense could be said to be schools that were built without adequate discussions with teachers. In these cases, there are schools that initiate various activities that take advantage of the spaces as well as schools where the evaluation did not rise and that did not take advantage of the spaces. Change progresses through such periods of trial and error.

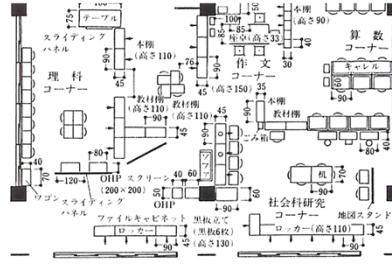


In the second half of the 1970s, schools appeared that had large impacts on transformation of both the education and facilities sides. One representative school is the Higashiura Ogawa Elementary School in Aichi Prefecture. The designer's proposal was based on overseas literature and other sources and had the goal of achieving learning spaces with high flexibility by providing learning centers for each grade and multi-purpose halls. Directed by Professor Yukitsugu Katoh of the National Institute for Educational Research, the efforts of the group of teachers took advantage of the open space and worked to build curriculum based on individualization/personalization that developed into various forms of learning.

Progression towards open styles:  
Individualization/personalization



ラーニングセンター(1979年)

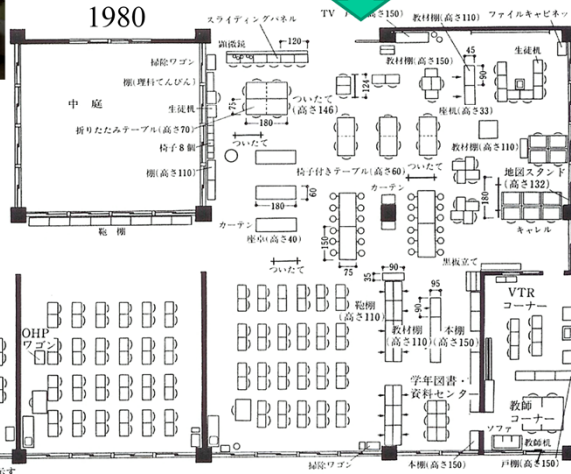


1979



B 6年フロア(1980年)

方向は欄・ロッカー類の使用方向を示す



1980

Higashiura Ogawa Elementary (Aichi)

Initially, there is a stage when at a given time a corner that had been created was used for an activity. As active use of open space for various subjects or comprehensive learning that went beyond a single subject increased, it was decided to create a flexible space that was easier to use by removing the partitions between classrooms and open space to allow continuous use of the space that developed in various types of learning.

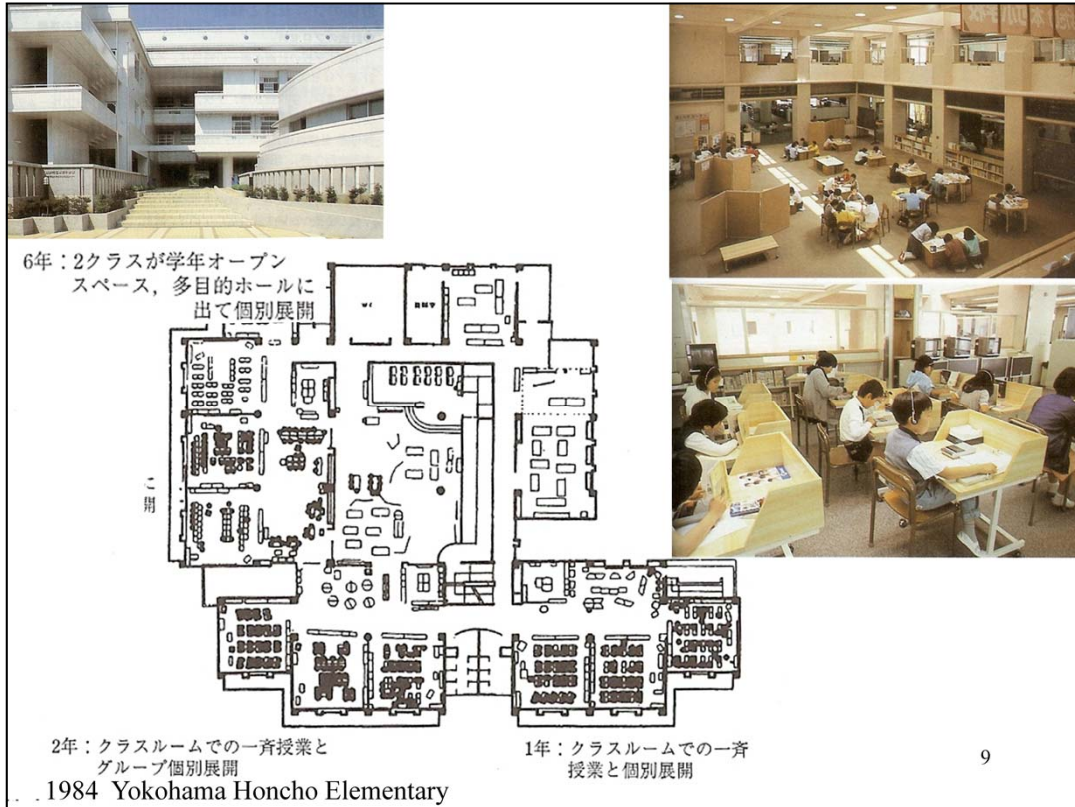




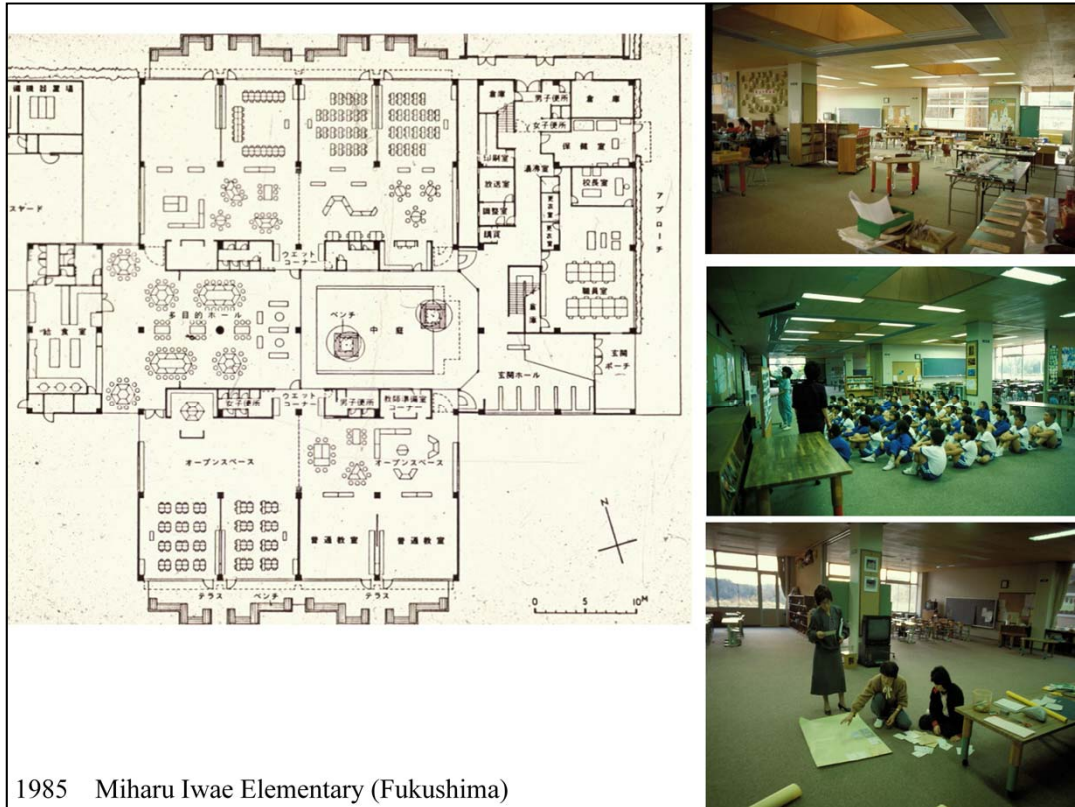
1978 Nanto Fukumitsu Chubu Elementary

The Fukumitsu Chubu Elementary School in Toyama Prefecture is another example from that period.

Grade units for four classes were created and rails were installed on the ceilings in a 2 m grid that allowed 4 types of freely movable panels including 2 m wide blackboards, bulletin board or panels with windows or doors to be used by a grade or their teacher to create necessary learning spaces. The educational approach of the town was that teachers should prepare but not stand and talk. Based on this watchword, it was attempted to grow beyond one-way lessons by the teacher and achievements were made. Following the lead of these schools, there were schools created in the following decade in various regions throughout the country with open spaces.



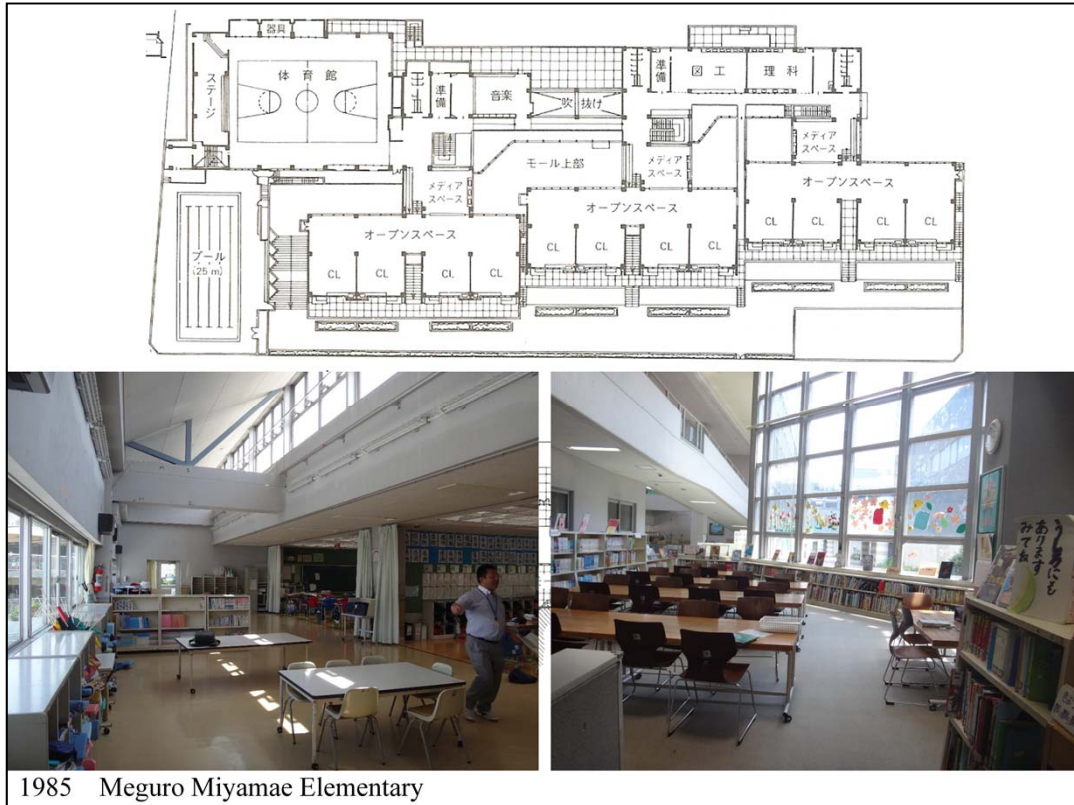
Following this first generation, the Yokohama Honcho Elementary School shown in this slide was built in 1984. Due to concerns that the traditional education in schools with Yokohama's standard design had too little freedom, the teachers started a study group and used the preceding initiatives as a base for persuasive discussions with the city and this school was created.



1985 Miharu Iwae Elementary (Fukushima)

In contrast to a major city like Yokohama, this is a school in the small town of Miharu, Fukushima Prefecture.

In a response to the Fukushima Office of Education as part of a planned school construction that was used as an opportunity for educational reform; teachers, parents and local citizens participated in the school creation process. The result was the Iwae Elementary School. While retaining classroom spaces, there are open spaces, small spaces, wet corners, verandas on the outside as well as a central inner garden and halls. This is a school that was created with a variety of large/small as well as inside/outside spaces that are available around the classrooms to allow development of diverse activities.



The Miyamae Elementary School was built around the same time in Meguro-ku, Tokyo.

The design of the school was entrusted to the Architectural Institute of Japan to combine a planned model school and approach to future education. The various parties responsible for the establishment of the school, teachers, researchers, and designers joined together to cooperate in the creation of this school.

Acknowledging these movements, the then Ministry of Education in 1984 with the objective of addressing diversity in educational methods, established a system to add open spaces contiguous to classrooms to the standard area for subsidies. This resulted in an immediate increase in the number of schools with open spaces. Rather than adding a specified room, the relationship with the classroom was required as part of a proper design process. In addition, building school facilities that are linked to educational reform cannot be handled by the architect alone and requires a common understanding with teachers and parents. Thus, simply producing the final design for the construction is not adequate, the approaches need to be organized and the consciousness increased that it was important to show the form of this approach at the preliminary design stage. Thus funding for preliminary designs became covered by subsidies at this time. This became a turning point when a major change in school architecture began. Also, architects and designers became involved as actors in the design of schools and the birth of this foundation.



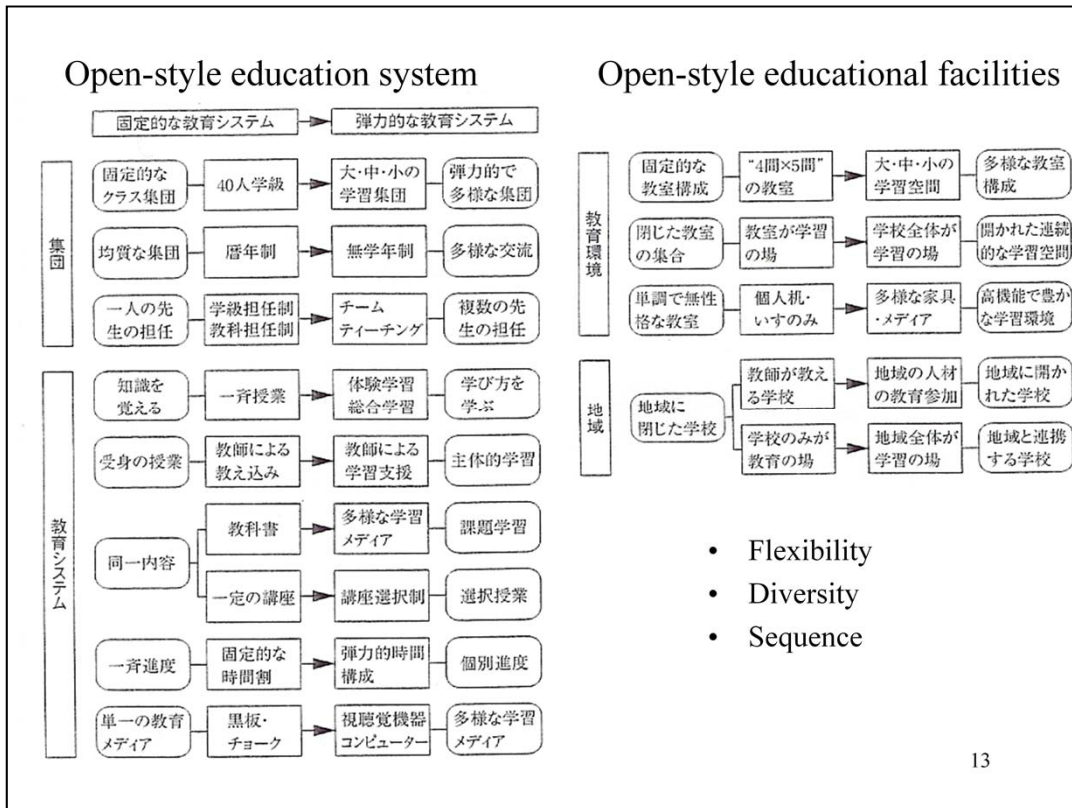
Renovations  
(Before)



Yokohama Kohoku Elementary (After)



This is an example of remodeling of a conventional standard school building influenced by these movements and by discussions of the approach to education. It shows what can result from remodeling when education and facilities are considered together.



While there are various ways to organize the relationship between education and facilities, this figure lays out the flow from the initial stage that I have discussed, the development phase that grew from this and what we are aiming for.

Open-style education system and open-style educational facilities: In recent years, there has been a belief that open-style education is removal of classroom partitions. It is necessary to understand that open-style education seeks a new approach to education on both education and facilities sides from the fixed and closed system. Now, I would like to move on from the past to discussing the present.

## Present

### Goals When Creating Educational Spaces

**1. Environments that encourage proactive and independent behavior**

Educational materials, posters and displays that portray both the charms and themes of the subject. Allow for a variety of learning types and styles, and allow for choice in regards to where work is performed.

**2. Spaces that allow for diverse forms of media use**

Books, educational materials, devices, and computers that can be used as needed during classes to encourage independent and comprehensive learning, customized for individual academic levels, that encourage information literacy

**3. Spaces that encourage cooperative learning and relationships**

Self-affirmation, feeling recognized, empathy, classes, school years, students from other school years, students and teachers

**4. Spaces that encourage and support teachers to collaborate**

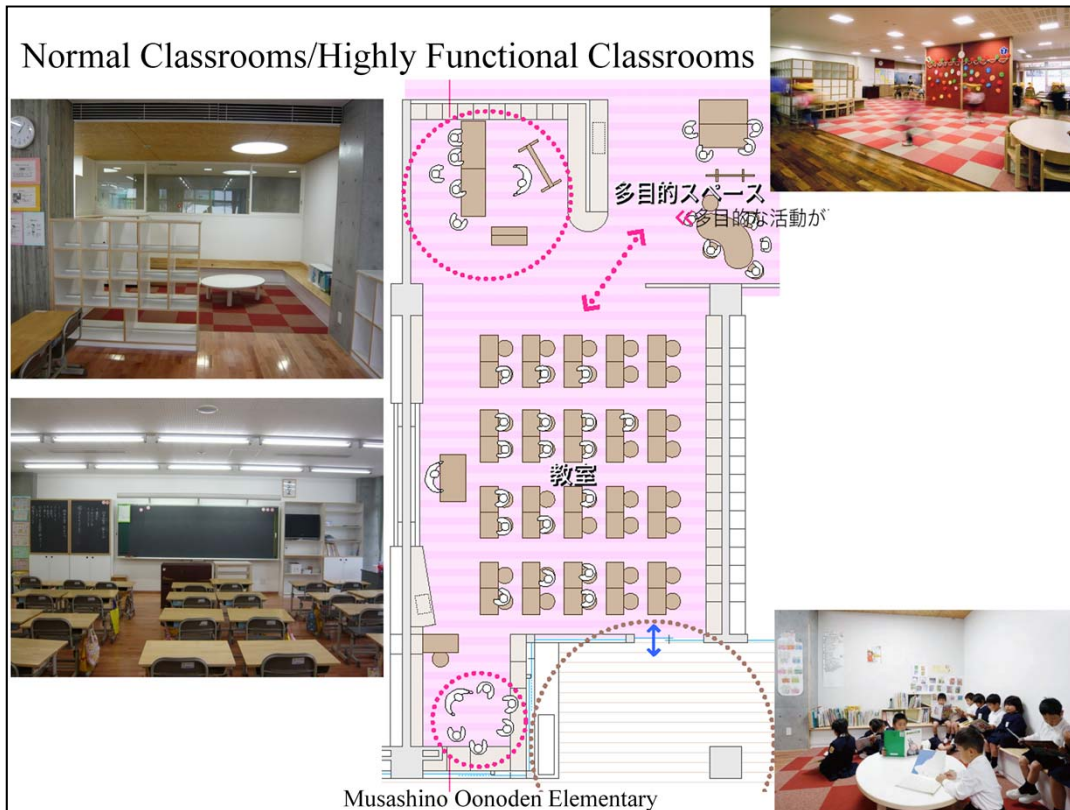
Draw out the power of teachers as a group  
Allow for formation of flexible groups  
Encourage multiple perspectives when examining students

I have discussed the initial approaches. Based on this and the various approaches that have been applied, here are 4 goals for creating educational spaces.

When considering school space, some important points that I have gained from discussions with several principals who have led schools that used new schools spaces for various educational approaches:

- (1) Environments that encourage proactive and independent behavior,
- (2) Spaces that allow for diverse forms of media use,
- (3) Spaces that encourage cooperative learning and relationships,
- (4) Spaces that encourage and support collaboration by teachers.

When I mentioned points 1, 2 and 4, the principals all stressed that these points were surely important but that point 3 was added because those mentioned 3 points did not adequately cover. They felt that if that there had been results from the various efforts that had been carried out to change from traditional approaches, this had been important.



How should classroom space be considered given these 4 goals? First, for normal classrooms, how can we make them highly functional classrooms? In the previous discussions of Danish classrooms, there was feeling that the range of functions for classrooms is very wide and that functions change in brief spans to meet goals. Closed classrooms are opened as well as being closed again; furthermore, classrooms are expanded and opened up again.

As I discussed earlier, teachers shared extremely strong opinions during discussions that classrooms must be maintained as fundamental spaces for Japanese schools. How can this space be maintained while supporting various activities? In one word, square, that is escaping from square classrooms or making classrooms with irregular spaces. There are various combinations such as small corners, large corners, outside spaces such as terraces or open spaces with greater flexibility than classrooms as well as multi-purpose spaces.



## Classroom Surrounds



This slide shows similar classrooms with a similar approach; around classrooms that have been modified slightly from a square shape, corners have been created, terraces have been created as well as corners for lockers that are separated from classrooms. There are open spaces on the outer side and small rooms on the other side of the open spaces.

## Normal Classrooms/Highly Functional Classrooms

Interactive Board  
Video Projectors  
Cameras



Doshisha Junior High (Kyoto)

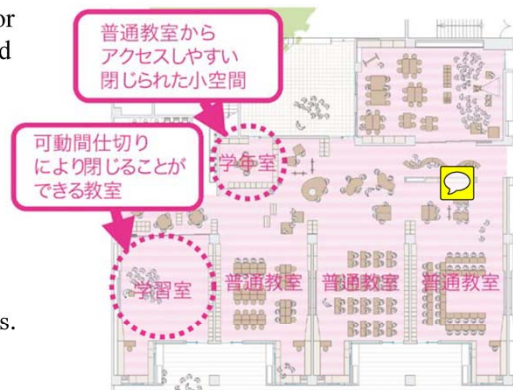


Northbury Primary School, London

Simultaneously, the use of ICT (information and communication technologies) becomes an issue.

## Classroom surrounds for flexible and diverse learning methods

- Small classrooms and open spaces to allow for the creation of large or small spaces as needed for comprehensive learning, teaching small numbers, the flexible creation of groups and diverse forms of learning.
- Open plan educational spaces that encourage cooperation amongst teachers, and allow for the free creation of educational methods.
- Continuously connected areas that allow children to be watched by teachers at all times.



Hanawa Tsunetoyo Elementary



Musashino Oonoden Elementary

When discussing classrooms, we need to consider not only the classroom but also how to improve the spaces surrounding classrooms such as open spaces or multipurpose spaces. How do we make the spaces surrounding classrooms that flexibly meet the needs of diverse forms of learning? We need to make spaces with greater flexibility than classrooms to meet the needs of flexible creation of groups, diverse forms of learning such as comprehensive learning or instructing small groups and progress in educational methods. Instructing small groups or providing a cool down space for students suffering from panic requires spaces smaller than classrooms. We need to move from only having classrooms to using the space surrounding classrooms to provide both larger and smaller spaces than classrooms as well as combining such spaces. This will support flexible teaching methods as well as flexible creation of groups.

## Classroom surrounds allowing for selection of time, place, space, educational materials and theme

- Having a variety of **educational materials** (primers, books, computers, printed materials, actual examples) on hand, to match the interests, attention, understanding and level of all students.
- Display the results of student's efforts toward study in order to increase motivation, and allow them to experience different ways of thinking.
- Have a variety of differently sized and shaped tables and work areas, to allow for diverse styles of learning and the creation of flexible groups.
- Have mobile blackboards/whiteboards, allow students to express their own thoughts and listen to others' ideas, ensuring that students contribute to each others' learning, and that all participate.
- Areas for work to be displayed are available, therefore creating a proactive attitude to learning through the learning environment.

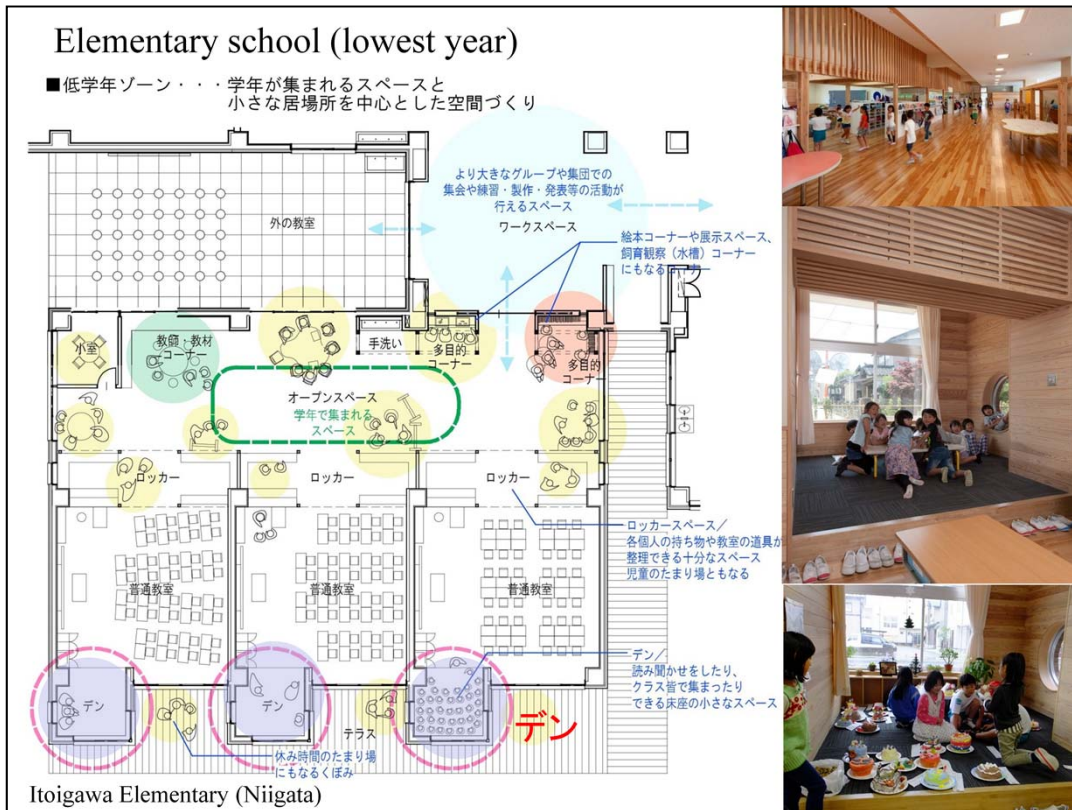


Musashino Oonoden Elementary



Kawasaki Haruhino Elementary (Kanagawa)

Another aspect of classroom surrounds is being able to select time, space, group, educational materials and theme. In other words, various settings for educational materials or space or location of desks are possible; being able to select a space allows children to learn in a space that they like. Also, having a classroom space with these tools allows for diverse styles of learning. Creating an environment including furniture, etc. is a major theme rather just a large open space.



This shows a recent plan that comprehensively incorporates the points we have discussed thus far.

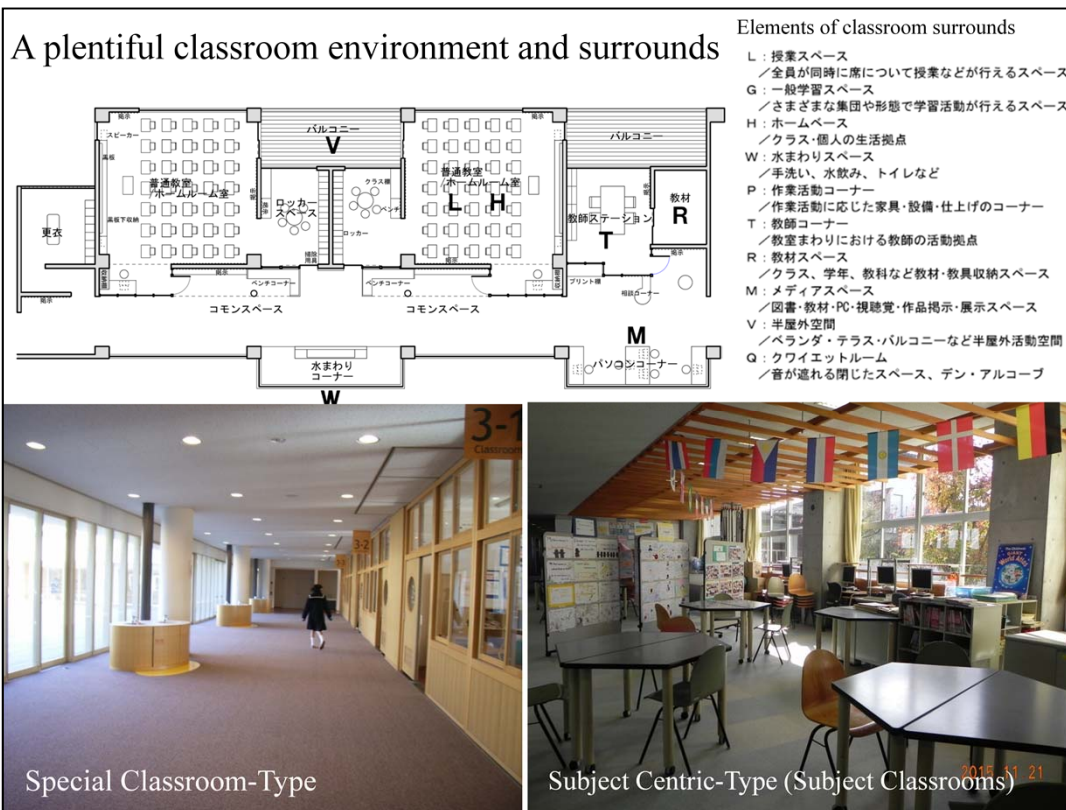
There are classrooms, there are small spaces, terraces, lockers are located near the classroom; the classrooms are environments prepared for learning. There are open spaces and there are closed rooms. In contrast to the initial approach of open spaces and multi-purpose spaces as flexible wide spaces to secure the freedom for diverse activities, this plan provides diverse spaces including wide spaces to allow diverse activities. There are similarities with the Danish explanation regarding creation of the spaces that permits diverse activities through flexible spaces and simultaneously diverse spaces.

However, the images and diagram on this slide give a strong impression that the classroom is square. The planning goals for classrooms and surrounding spaces that I've discussed thus far have all been elementary schools. Changes in education and facilities actually start from elementary schools. Thus, the shape of what should be done for junior high schools cannot be seen and the goal has not been seen. In the past when meeting with teachers, I remember their responses to the question of how we should consider junior high schools. Their response was that they didn't have the time to deal with the crux of educational reform and curriculum instruction improvements due to the demands of preparation for high school entrance exams and lifestyle guidance for students.

## Junior high classroom surrounds

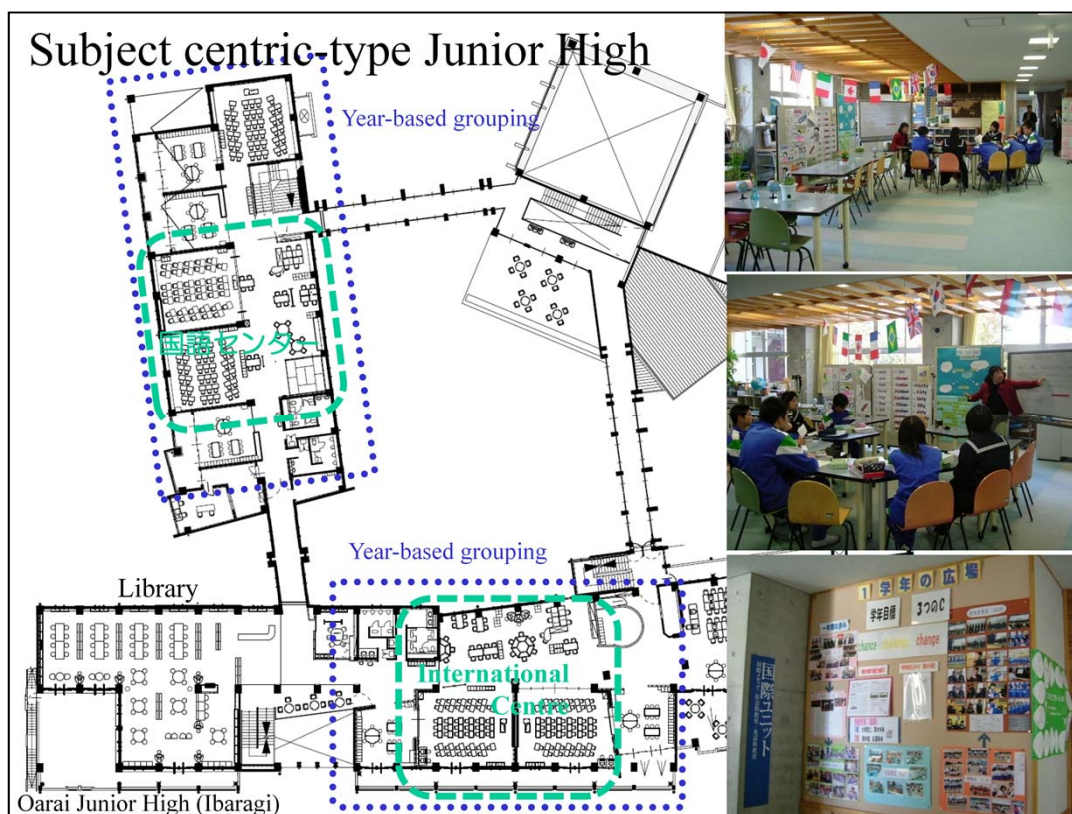


How should junior high school facilities be considered? This is a typical junior high school classroom; compared to an elementary school classroom there are no materials on the wall related to the lessons. While the classroom in the lower left photograph is very vibrant, these are not materials related to the subject. As normal classrooms are used commonly for several subjects, it is not possible to post materials for a given subject, show the learning achievements of the children to everyone, or prepare and maintain an environment for a given form of learning.



As a result, even if an open space is available, like the normal classroom, the open spaces are not often used as a space for classes and are often not mature environments for learning. Nor is there grade unity as at elementary schools. The reason as you are aware is that elementary schools are organized with teachers responsible for a class while junior high schools are organized with teachers responsible for subject areas. At elementary schools while building unity in a grade, various discussions among the teachers builds cooperation and this is the background for building diverse learning environments or providing the opportunity for developing forms of learning. However, this doesn't work as well when teachers are responsible for subject areas. Thus, what can be done about this? Where we ended up with is an operational approach based on subject centric type classrooms.

Subject centric means that dedicated classrooms are allocated for each subject and students move to those classrooms to receive lessons. In Europe and America while junior high school facilities have some form of subject centric classrooms, in Japan junior high schools are generally built with normal and special classrooms. The lower right photograph is an example of open space adjacent to a subject centric classroom where the environment has been freely developed into a media space exclusively for the subject. It may be that large differences in school spaces are created by just such choices.



The space layout of this school is the result of joint discussions of the board of education and school before the school was rebuilt 14 years ago. While the discussions included opinions opposed to creating a school space that was different from a conventional school, agreement was finally reached on the educational approach and this school is the result of this process. This school was built based on the intense discussions among the teachers. Since then, from attending the open classes that are held each year, I believe that this one of the most active junior high schools in the country.

However, as stated earlier for a subject classroom type schools, even if subject classrooms are merely lined up along a hall, this is a subject classroom type school. In contrast, I have previously proposed that if school reform is sought by creating facilities along with the type of education that seeks to provide diverse education by organizing subject centers, these are not merely subject classroom type schools and that should be differentiated by calling them subject centric type schools. Perhaps it can be said that there is a trends towards adopting this approach.

My first involvement in this type of school creation was the planning of a small junior high school with 1 class per grade and less than 10 students per class. While the teachers wanted to raise the desire for learning, how could desire for learning be raised for a small school where competition was not a factor? During these discussions, communicating the fascination of a subject or making the children see the world of a subject was the result. Thus, making the sight of learning by other grades become a stimulus, by making the environment around a classroom the world for a subject, this meaning of a classroom was intended to raise the desire of children for learning about a world that they were interested in. This experience formed the base for current school proposals.



## Considering educational spaces in junior/senior high through subject-centric-type planning

Theme: What would an educational space be that would allow teachers of each subject to teach as they see fit, and how could we realize such a space?

### 1. If the goal was an educational space for a junior high school

- Education that fosters autonomous, independent, active students
- Subject guidance that teaches the significance of learning, the meaning of the subject, and provides a sense of reality
- Education that creates close relationships through the diversity of students and teachers, and involves everyone
- Improving teachers' skills through cooperation with other teachers
- Through diverse communication, accept others, and increase individuality.
  - Through sharing amongst children, cooperation amongst teachers, and communication between year levels, create a cooperative body in regards to learning
- Teachers can create a learning environment suited to each subject as they see fit 24

Now, the topic of my speech moved onto the Subject Center approach. But, I do not intend to say we should pursue school design based on the Subject Center approach here.

What I intend is to move on to "Understanding Education from Classroom Space," which is the main agenda today, through middle school planning based on the Subject Center approach. So, I think we must consider what the education space where teachers of the respective subjects can take desired actions under the subject-based teacher assignment system is, and how that should be achieved. If you aim at elementary-to-middle school educational continuity, you can put "with the aim of achieving elementary-to-middle school educational continuity" in the "under the subject-based teacher assignment system" part. I think it is important to study the classroom space toward such a task.

The goals of the classroom space creation at the schools I have presented above include those described here. The first goal is to develop voluntary, independent and active students. The second goal is to help students learn while feeling the significance of learning, meaning of subjects and reality. And the third goal is to pursue all-around education under the diverse and close relationships between students and teachers. These are approximate transcriptions of what have been laid out at various schools as their goals.

## Creating educational spaces for junior/senior high

### 2. Planning educational spaces that are subject centric

- For each subject, have the right number of subject classrooms for the number of class hours. Through combining subject media spaces, small classrooms, teacher and educational material spaces etc., create “**subject centers.**”
- In subject media spaces display educational materials, books, computers, and learning results. Work to create a learning environment suited to the content and characteristics of the subject.
- Through organizing the environment in subject classes/media centers in advance, learning styles and the creation of learning groups will proceed smoothly.
- This prepared environment will allow students to understand the meaning and joys of the subject, as well as the learning goals, and can move towards studying independently.

### 3. Traits of subject centric-type

- The creation of a learning culture based around striving to do ones best, through visualization of the education that the school and each subject is trying to achieve.
- The creation of educational spaces that make use of the characteristics of each subject, and are easy to learn in, teach in, and inhabit.
- There are methods for taking into consideration student movements, areas, and creation of classes etc.

### 4. What is educational space planning?

- Must begin by making clear educational principles and targets. These will act as guidance moving forward
- Without educational aims, debate/consideration regarding necessary changes to education, or planning that promotes mutual understanding, educational initiatives will not move forward as hoped for. <sup>25</sup>

The next topic is education space creation based on the Subject Center approach.

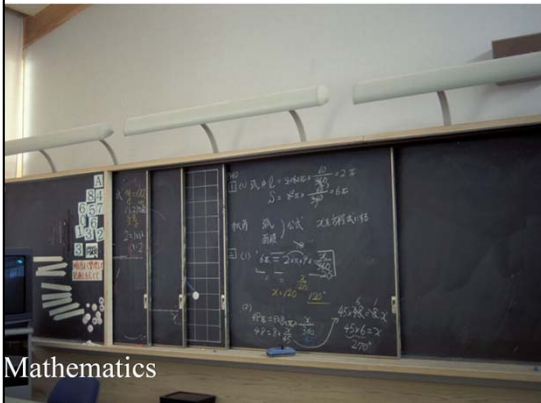
The approach is to first configure one unit, namely a Subject Center, by combining elements such as the required number of subject classrooms for each subject, an open space serving as the media space for the subject, small classrooms, and teacher and materials spaces. Then, teachers, or teachers and students, will produce various environments so that teachers can conduct various learning programs while feeling the significance and goals of learning. The features of this Subject Center include the effect of visualizing the content of learning on which each subject, each teacher and each child is working, or the education activity in other words. I think it can be said that a school culture in which teachers and children enhance with each other will be established as a result.

## Subject Classrooms

- Classroom planning to meet the needs of each subject
- Creating an environment that meets the aims of each subject
- Creating a receptive environment for students
- Encourage students through environment creation



Social Studies



Mathematics



Japanese Language

Hofucho Toyotomi Junior High

As opposed to the classroom shown earlier, which does not contain anything related to the subject, the subject classroom allows you to easily recognize what subject the classroom is about. In other words, teachers can design their classrooms. With the acquisition of such an environment, teachers can put forward their ideas or requests. In a space that has been created that way, you can see teachers freely prepare what they want to prepare for units of that period.

## Subject Media Space

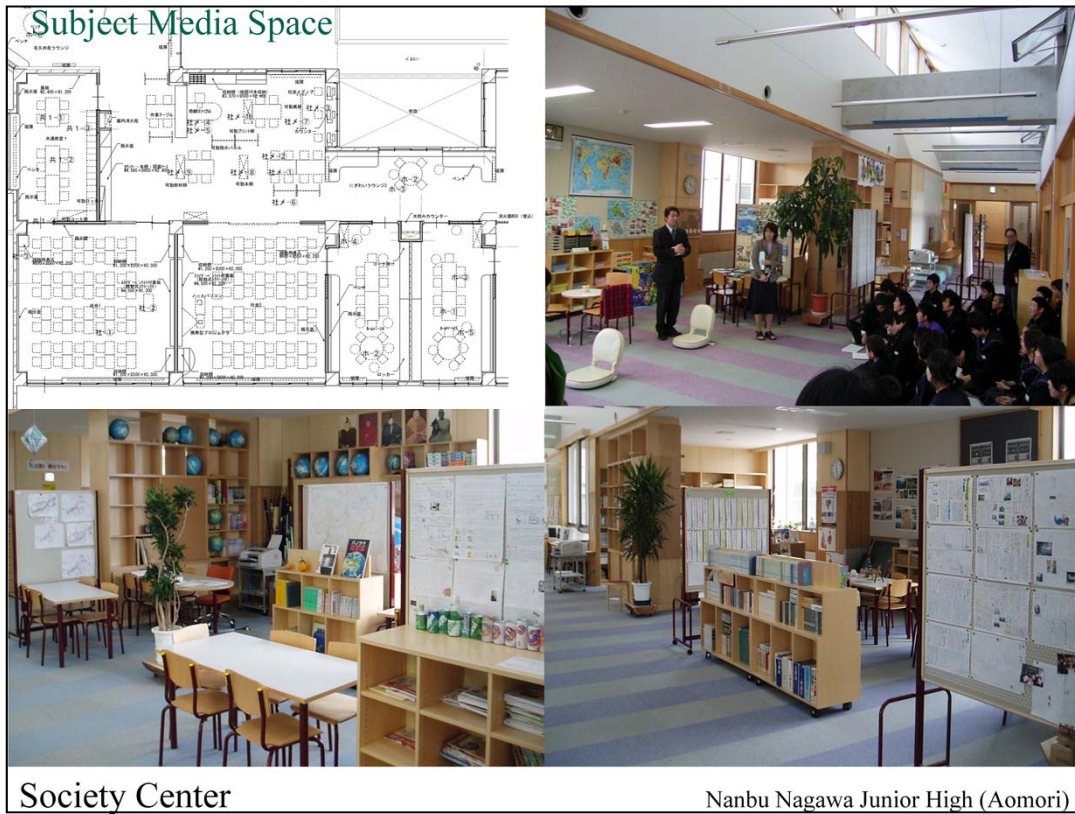
**Learning spaces that allow for a choice in time, place, classmates, learning materials, and themes**

- A variety of **educational materials** (guides, books, computers, print materials, and actual examples are available
- The results of students' work are on display, with an aim to providing motivation, and allowing them to experience others' viewpoints
- Accommodates a variety of learning styles and the flexible creation of groups
  - Includes display areas and spaces
  - Large tables, desks that can be pushed together
  - Movable shelves for learning material
  - Movable whiteboards/blackboards



Humanities center, Old Miharu Sakura Elementary (Fukushima)

And, the same can be said about the media space for subjects. As you have seen the slide, various learning materials are placed here. Or, various leaning styles are made possible. Or, various places where students can choose a learning site are provided. Articles such as a notice board and furniture that make them possible, together with a building, are comprehensively planned. So, various activities are generated.



Society Center

Nanbu Nagawa Junior High (Aomori)

These are examples at several schools.

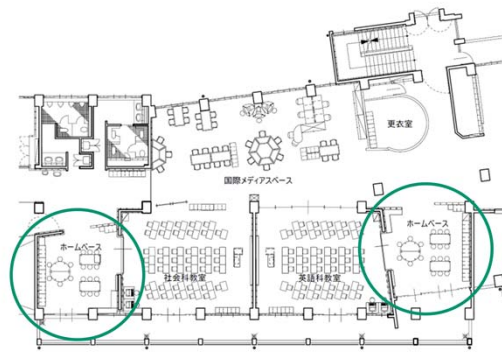


Various learning environments are created, and various activities are conducted this way.

## Home Base

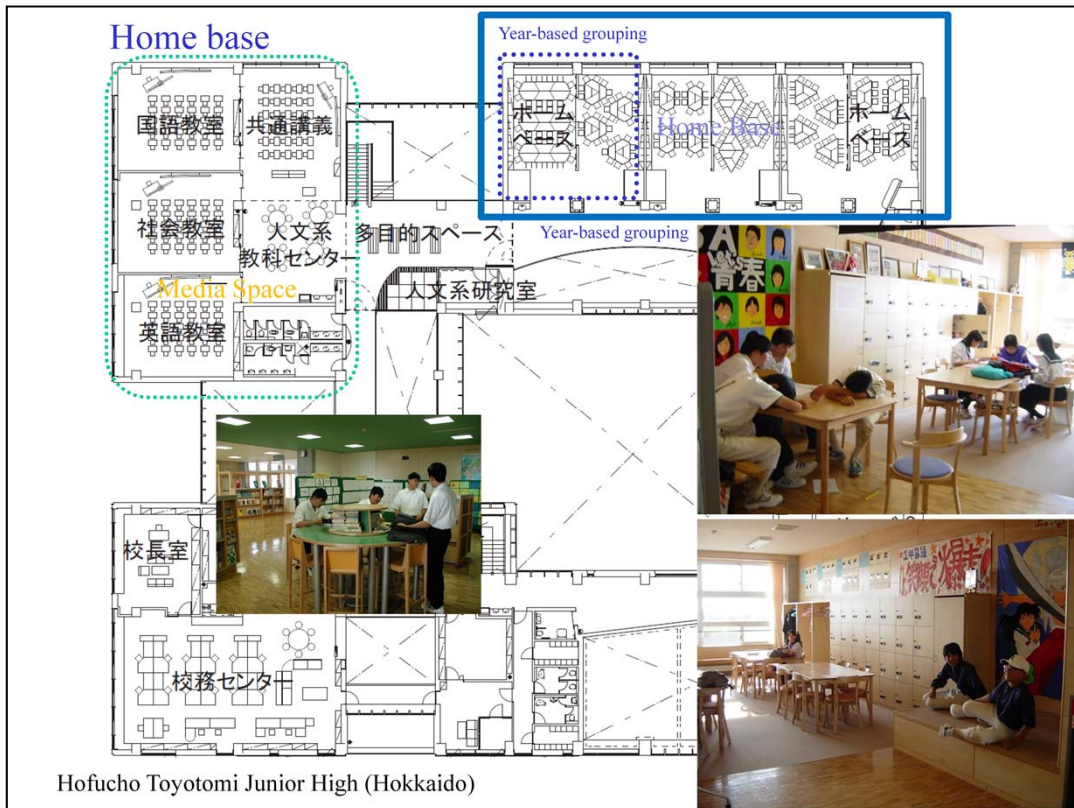
### Class hubs

- The basis for school life
- Spiritual bases for individuals
- The creation of class hubs
- Spaces for use in school life
- Created by the students themselves



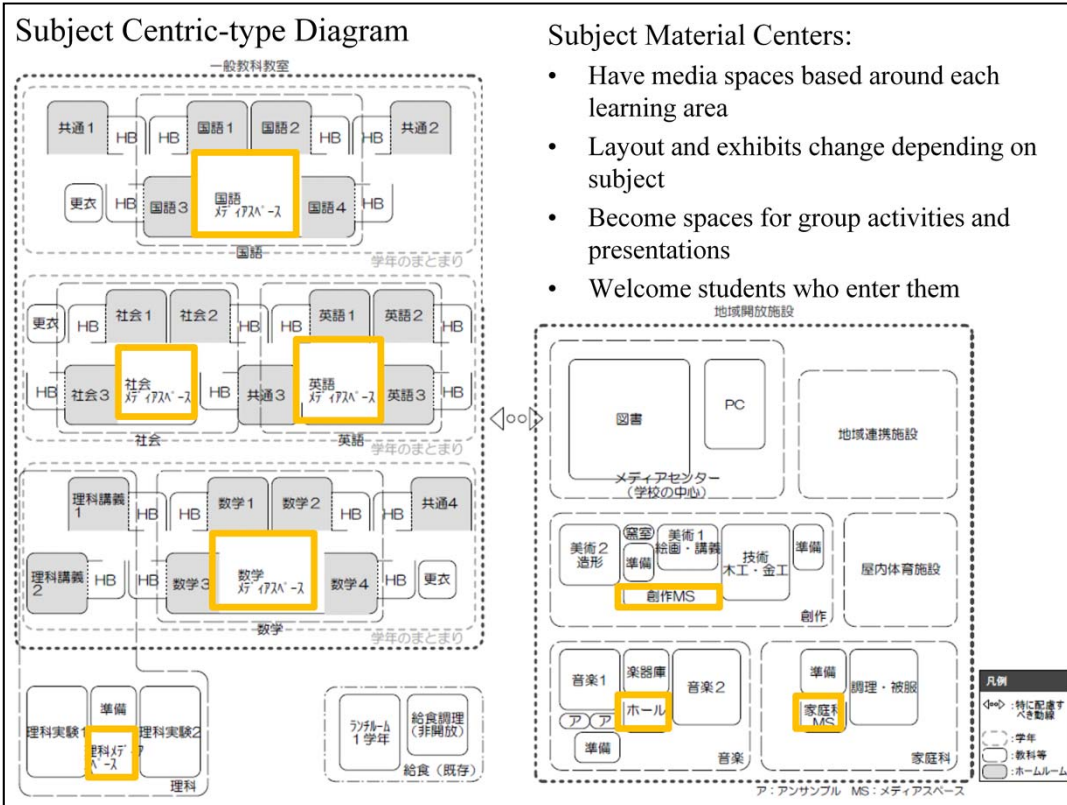
Iinami Junior High (Ibaragi)

I said the space of a class is important earlier. Then, how about a case of a subject-based classroom type, or how about a case of a class? Of course, such an argument with teachers tends to turn out to be a major agenda. What has been devised through such discussions is the idea that a class creates a space that will be used as the home base exclusive for the class, adjacent to their classroom. The classroom is used also by children of other grades or other classes for lessons. However, the home base will serve as a living room exclusive for that class.



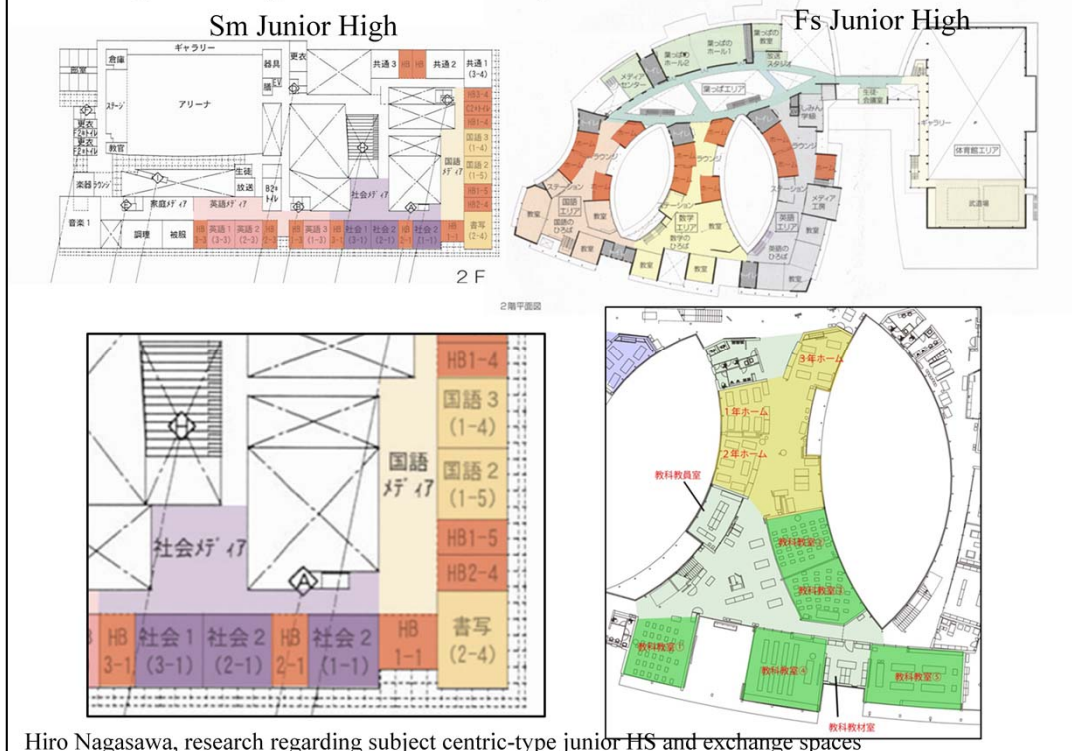
So, through a series of discussions, a new space that has not been seen in conventional schools is created, and a base for enabling various forms of learning activities and allowing students to lead a calm school life is established. This is also an example of such a home base.





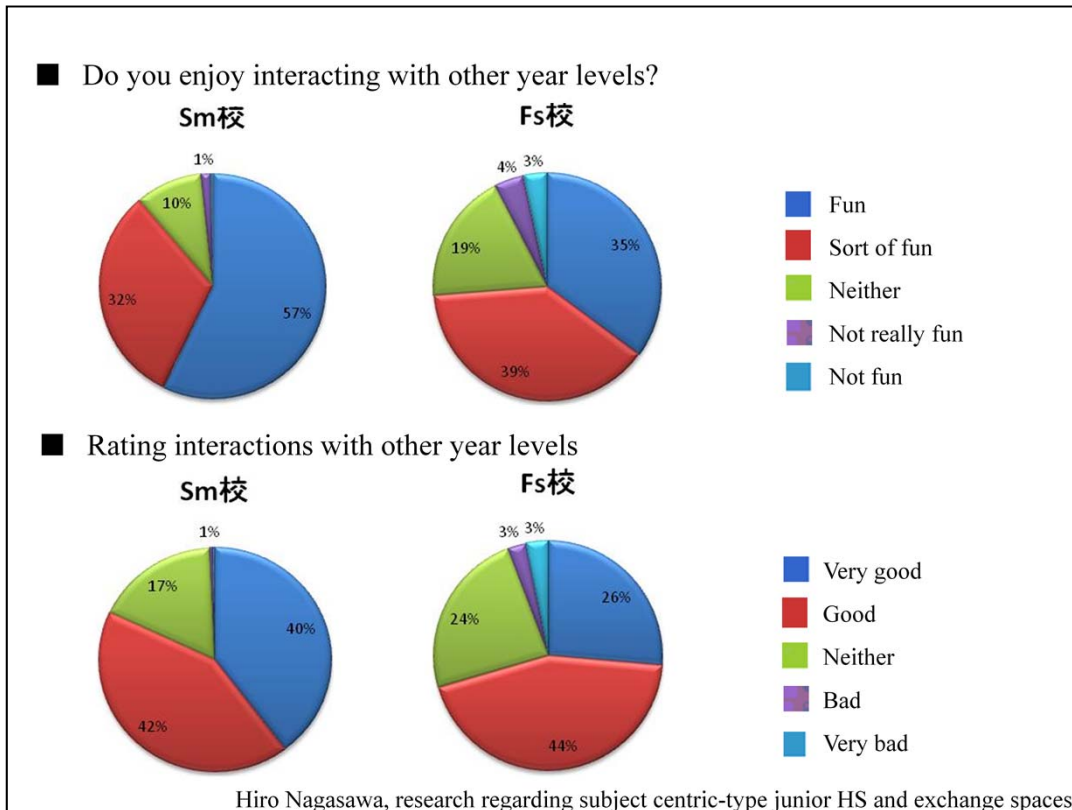
These are relationship diagrams showing the elements of spaces I have talked about. In this idea, classrooms of the respective subjects, a home base, and a materials room, etc. are combined around a media center.

## Fostering exchange between school years

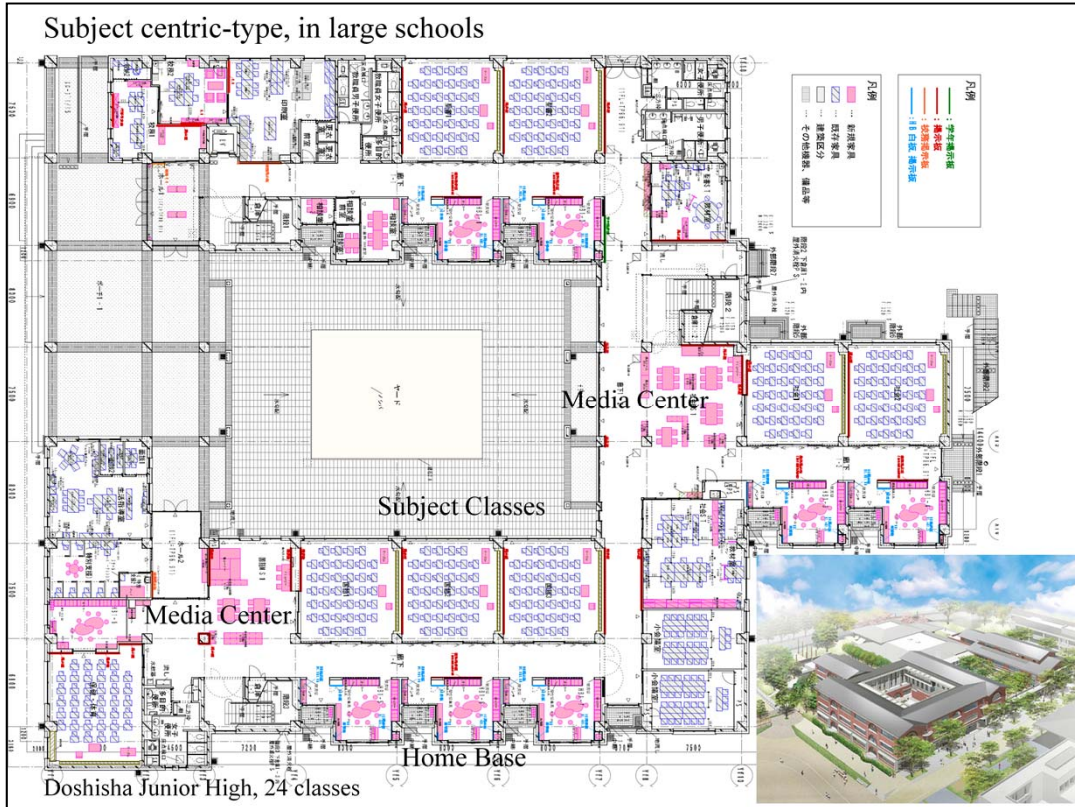


Hiro Nagasawa, research regarding subject centric-type junior HS and exchange spaces

With this subject-based classroom type or Subject Center approach, students move to a next classroom by themselves. Then, they will always walk past students of other classes or other grades in the school. For middle school plans, sometimes teachers ask us to separate buildings and floors by grades in order to prevent students of different grades from contacting with each other because trouble always occurs in places where different graders come in contact with each other, as a very strong request. But, in the case of this Subject Center approach, children come in contact with children of other classes or other grades from time to time. For example, this school is an example where another vertically segmented group is created by combining a first grade, a second grade and a third grade to assign classrooms. It's the same with this school.



This shows the result of a questionnaire on how students feel about being in a different grade, interacting with a different grade, and coming in contact with them. “Fun” and “Slightly fun” responses represent an overwhelming majority, though the result slightly varies with schools. So, it seems that there is in fact a gap between the request by teachers to clearly distinguish between different grades for the sake of student guidance, which they make during talks with me, and what students feel in coming in contact with other grades. I think it is important to assemble the whole school space while keeping an eye also on such feelings of children.



I would like to mention one more thing. Some say that the Subject Center approach is good if the scale is small, but if the scale is large, students will move a long distance and it will be difficult to operate the system. This slide shows a large school accommodating eight classes per grade. But, students smoothly move, and school life and learning activities that make the most of that characteristic are achieved there.

## Libraries as the centers of schools

- **Reading Centers:** Introduce the joy of reading
- **Learning Centers:** Support students to study independently, comprehensive learning and self study spaces
- **Information Centers:** Computer rooms and **media centers**
- **Exchange Centers:** Provide a different atmosphere from the classroom, a place to interact with other classes and year levels
- **Learning Material Centers:** Provide management for learning materials, resources, devices
- **Region Plazas:** For use after school and on non-school days



Oarai Minami Junior High  
(Ibaragi)



Itoigawa Elementary



Shonan Gakuen Elementary  
(Kanagawa)

Well, time is running short. I have talked only about what are around the classroom. But, of course, school facilities also include a library as a space that supports learning.

From computer classes to media centers, to active learning spaces, to library learning commons (LLC)

- Changing from computer classes to **learning centers with computers**
- **Schools where computers can be used wherever, schools becoming ICT-centric**

From tools that teach, to tools that encourage learning

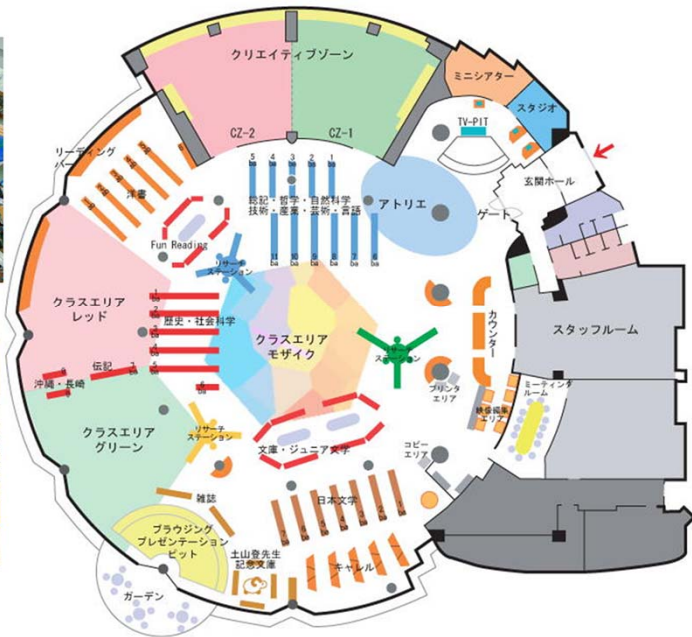
**Gathering and transmitting learning** using networks



Japan Women's University Homei Elementary

And, (I think it is also important to) review the computer room as a “library learning commons” intended for various forms of learning, not simply as a room for learning the computer.

## Communications Center



**Doshisha International  
Junior/Senior High School**

This is a plan formulated some time ago. This is an approach of calling a space where various learning activities can be performed around a library as a communication center.

## Workshops/Special Classrooms

- Spaces that allow hands-on experience
- Contribute to students' imagination, allow them to create and experience
- Can come into contact with actual objects
- Are a space for regional activities



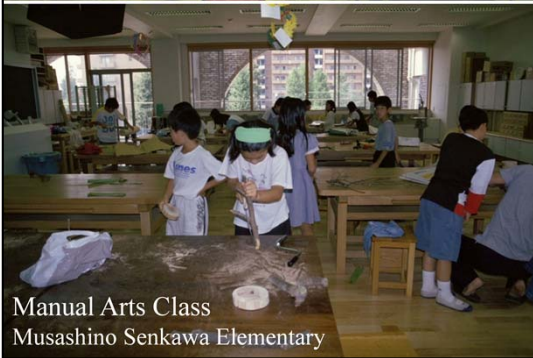
We should also create a space for voluntary activities or subject-specific activities of individual students also for special classrooms.



Special classrooms that foster  
joy amongst students



Music Class  
Musashino Oonoden Elementary



Manual Arts Class  
Musashino Senkawa Elementary



Home Economics  
Chiba Utase Junior High

I hope that as a result, the joy of creating things and the pleasure of doing things will be achieved in a place having an atmosphere and equipment as the place for those activities, not in what is called a classroom.

An environment that welcomes children



Caritas Girls' Junior/Senior High



Doshisha Junior High

That is not only about the inside of the classroom, but also about the outside of the classroom, or a place into which to first receive students.



The outside of a classroom is improved. In the previous lecture, a case in Denmark in which the whole school serves as a learning space was presented. Just as with that case, the outside of a classroom is improved to receive children, and the children perceive subjects in their daily life.

Areas for a variety of gatherings



**Sakai Maruoka Minami Junior High (Fukui)**



**Itoigawa Elementary**



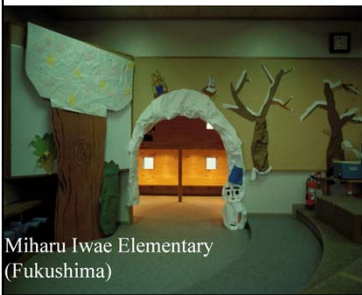
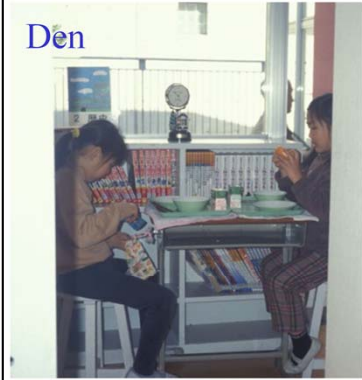
**Hellerup School**



It is also important to create various gathering places. The lower photo shows a school in Denmark.

Places for children to inhabit

Den

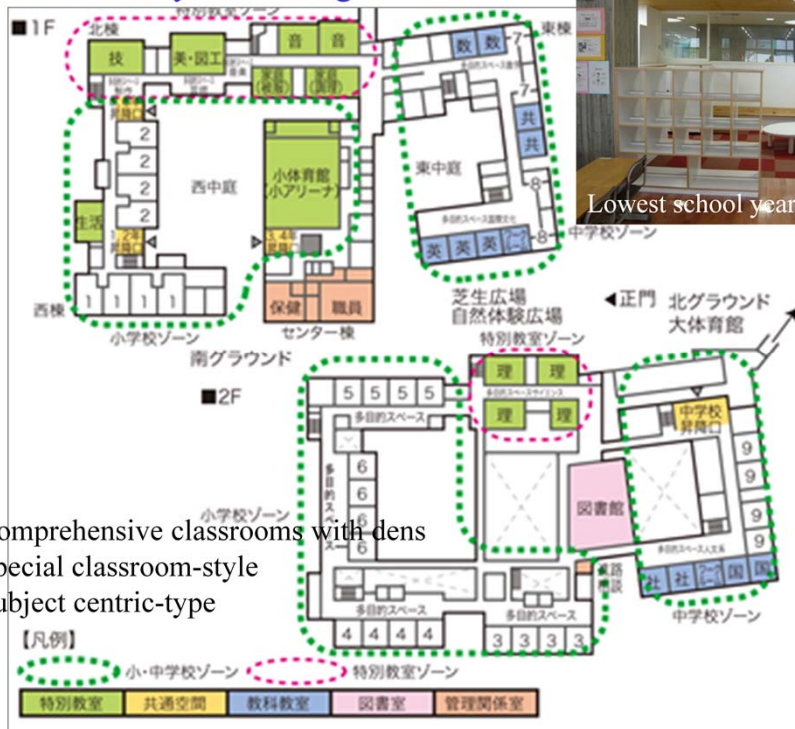


At the same time, it is also important to prepare small, diversified spaces so that children can learn while playing.



Hofu Junior High (Hokkaido)

# Combined Elementary/Junior High 6-3



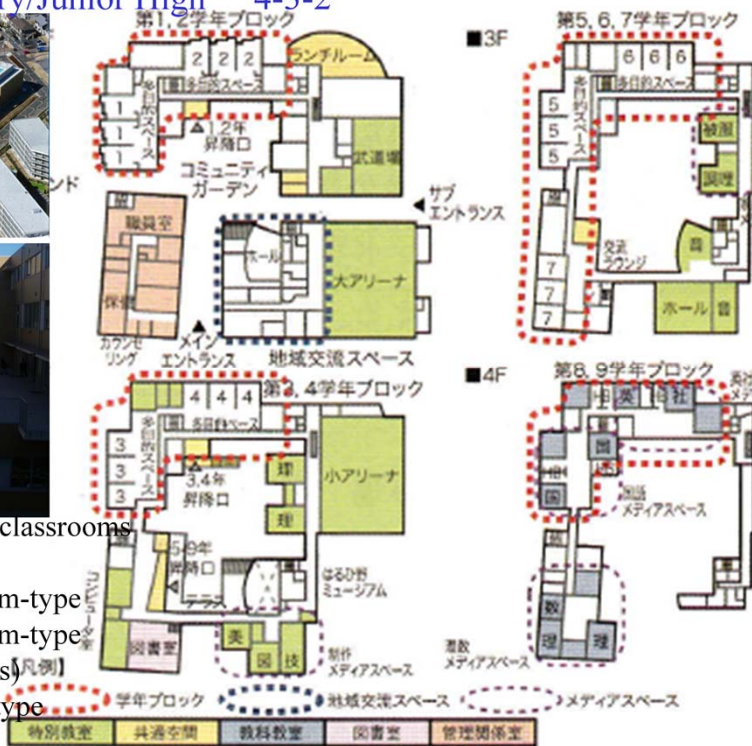
Year 1-2 Comprehensive classrooms with dens  
 Year 3-6 Special classroom-style  
 Year 7-9 Subject centric-type

Fuchu Elementary/Junior High (Hiroshima)

# Combined Elementary/Junior High 4-3-2



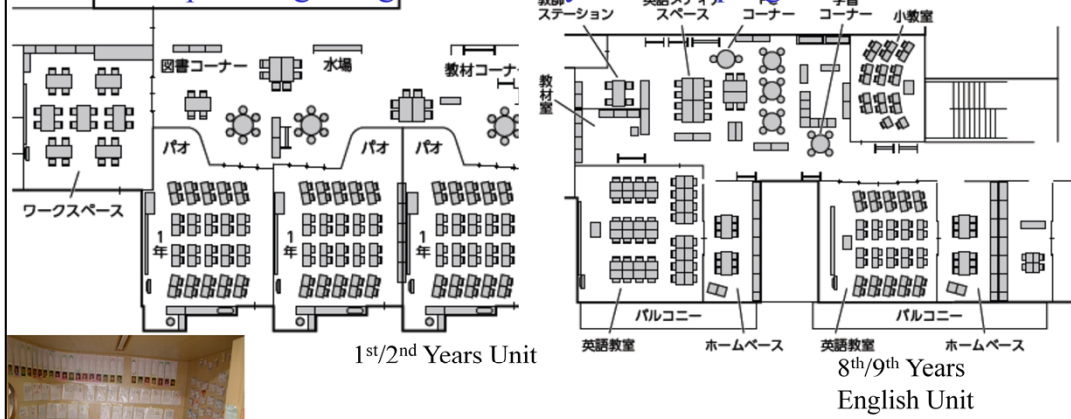
- Year 1-2: Comprehensive classrooms with dens
- Year 3-4: Special classroom-type
- Year 5-7: Special classroom-type (some subject-centric areas)
- Year 8-9: Subject centric-type



Kawasaki Haruhino Elementary/Junior High



# Classroom planning designed around year-level progression



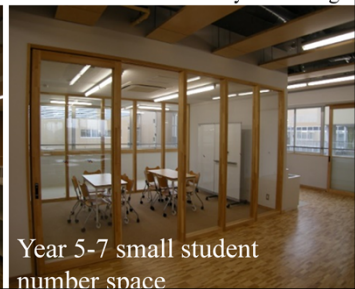
Kawasaki Haruhino Elementary/Junior High



Year 1-2 Classroom



Year 3-4 Open space



Year 5-7 small student number space

## Tomorrow Themes related to new educational initiatives and school planning

### Education

- System: Combined elementary/junior, combined junior/high education
- Educational Targets
  - Practical skills, thinking skills, expressive skills
  - Independent study skills, problem solving skills, empathy/cooperation with others
- Aims/Methods
  - Cooperative learning, active learning, inclusive learning “communication”**
  - ICT, IoT “Art”
  - Cooperation** amongst teachers “Teams”

### Facilities

- Highly functional, flexible classroom surrounds
  - Elementary (Year-based teachers): Creation of units, year levels, and open spaces
  - Junior high (Subject-based teachers): Subject centric-type
- Libraries, special classrooms, learning commons, tinker space, maker space, student spaces/spaces for everyday activities
- Management room (staff room): Work places, communication space
- Planning combined facilities for combined education

### Region

- Education with the region, **cooperation** amongst the school and region “combination” public facility management

Lastly, let me talk about the “future.”

I listed various items that are regarded as key words or phrases in considering the “future.” In particular, “communication,” “art” and “team” listed in the Purpose/Method section are probably perceived as among the major elements for creating a space.

## Active Learning

- Differs from one directional lecture-based education, lecturing and teaching styles that **encourage learners to actively participate in learning.**
- Active learning aims to foster students' overall cognitive, logical, societal, and cultural skills, as well as their overall knowledge and experience.
- **Discovery based learning, problem solving, experiential learning, investigative learning etc., group discussion, debate, group work, etc.**

(Aiming for qualitative changes in university education to create a new future, creating universities that encourage lifelong learning and independent thinking (findings))

Central Council for Education, 28<sup>th</sup> August 2012

When we talk about new learning, a term “active learning” is used as a general and comprehensive phrase. Since this can be explained in many ways, words and phrases used by the Central Council for Education are listed here. Anyway, active learning can be rephrased as active participation in learning, discovery learning, etc.

## Active Learning

What skills and abilities will individuals in future generations require to live independently and creatively, while working and cooperating with diverse people?

How is this connected to education that fosters attitudes to **provide individuals with the willingness to independently tackle problems, and respect diversity**, skills that allow individuals to cooperate with others, provide leadership, work in teams, and communicate, and provide individuals with a wealth of emotion and kindness, and consideration towards others?

How should **active learning** be performed based upon **language activities and research-based learning activities**, as well as the results of **experiential activities** that create an awareness of connection with society, and **learning that makes use of ICT**?

In order to fully make use of what we have learned, how should learning and teaching styles be connected to the content of education?

Do methods of educational evaluation need to be changed? If so, how should we evaluate and understand student's results brought about from active learning etc.?

From "Themes related to elementary and junior high education standards" Minister of Education, Culture, Sports, Science and Technology's questions to Central Council for Education, 20<sup>th</sup> Nov 2014

How should these themes be treated in regards to educational spaces?

This example is about university education. This can be summarized as perception of learnings, such as voluntary working, collaborating with others, leadership, sensibility, kindness, etc., as active learnings even in elementary and middle education. Now, the task here seems to be how we should perceive these as agendas on education spaces.

■ Active Learning, Stanford University D-school



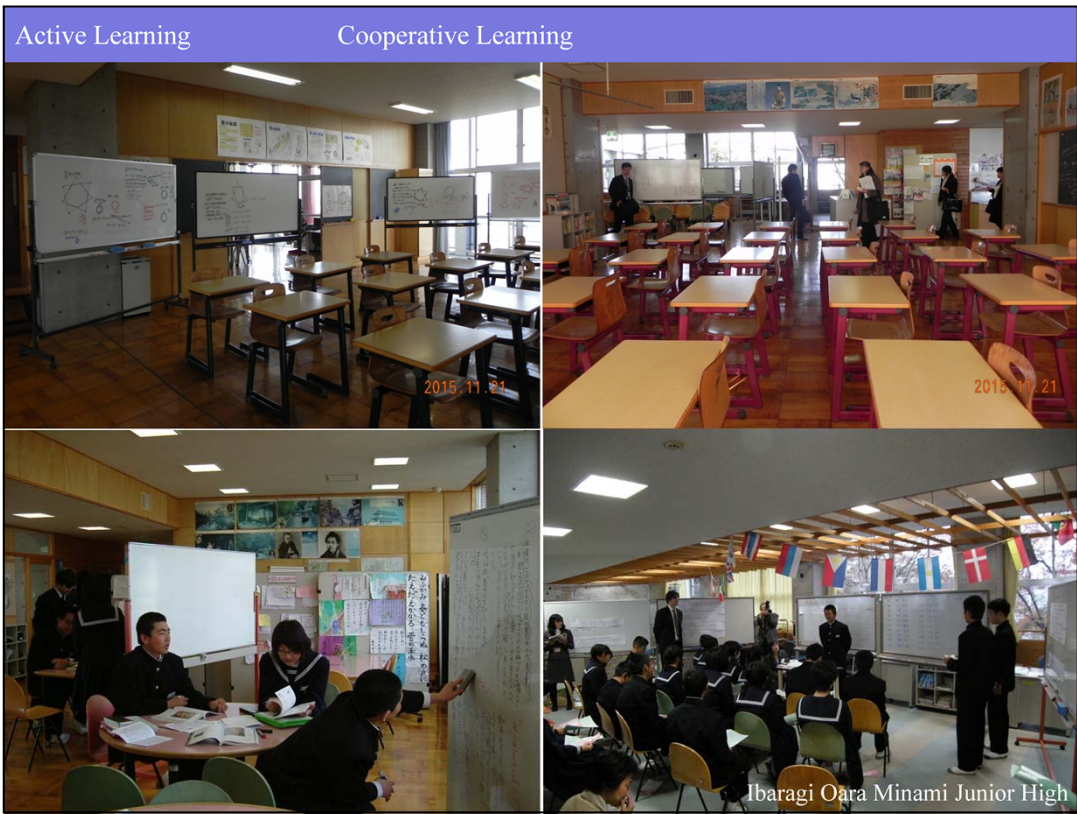
These are photos of “D-school” at Stanford University, which can be regarded as one of the roots of the phrase “active learning.” Places where all students can generate ideas in cooperation with each other, the results can be shared later, or various positions, various groups and various forms can be taken when they generate ideas are prepared.

■ Active Learning

Cooperative Learning



For example, these are photos of learnings conducted at schools that I have mentioned. Students are working on joint learnings while expressing their opinions based on whiteboards.



As shown in these photos, students further generate ideas on large whiteboards, and finally share the ideas among all students.

■ Active Learning Presentations



Fukui Nanbu Nagawa Junior High (Aomori)

■ Active Learning ICT studies



Doshisha Junior High (Kyoto)

And, works such as making a presentation in front of other students, listening to an explanation, and performing an activity using ICT are also included in active learnings.



■ Active Learning Experiential Learning



Oarai Minami Junior High (Ibaraki)



■ Active Learning A fully set up environment



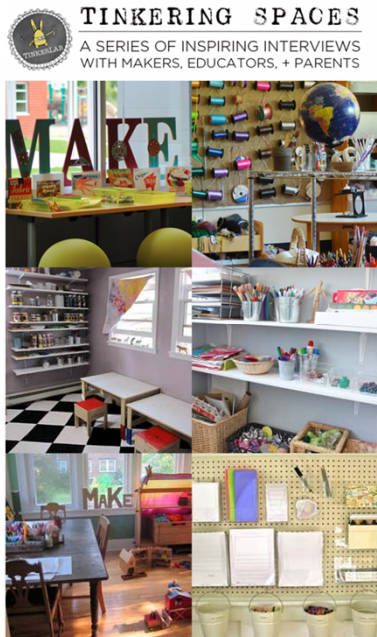
Doshisha Junior High (Kyoto)



Nagaoka Higashi Junior High (Niigata)

This can be considered as a learning environment where hands-on learning can be conducted making the use of this space, or that enables you to know what kind of activity will be conducted even if nobody is there, or urges an activity of some kind to be conducted. These are in fact learning activities that were adopted and seen in schools even before the term “active learning” is used to this extent.

In other words, various schools have worked on an environment for “active learning” in classroom spaces or learning spaces that have already been created based on the intended education. It can also be said that “active learning” is what comprehensively expresses these in one phase. One of the forms of the major task in learning space creation can also be regarded as already in sight. I think that what we are required to do now is finding out what we should do on top of that.



Tinkering is about playing, exploring, experimentation and setting imaginations on fire! Build your own **tinker space** and ignite a passion for learning.

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[www.steampoweredfamily.com](http://www.steampoweredfamily.com)

As the major task for that, I think we are currently required to respond to feelings such as the joy of working there and comfort as a learning site, in addition to functions. This means raising the level from “use” to “easy to use” or from “enhance the function” to “comfortable to use.” These may also include raising the level from “teach” to “easy to teach” or further to “comfortable to teach,” from “learn” to “easy to learn” or “comfortable to learn,” and from “stay” to “easy to stay” or “comfortable to stay.” If you add a word “comfortable,” you can imagine the state of the place or space.

And, “comfort” can be interpreted as “quality of life.” It can mean improving the quality of living there. Quality of life is a frequently used phrase in welfare. I think it can be said that we should perceive school life as life and improve its quality.

This is what is called “tinker space” or “maker’s space,” which has recently been one of the themes for space creation. In this space, each student can pleasantly work on an activity by himself/herself from top to bottom, or work on the activity together with a friend who is interested in the same thing. The space should be perceived anew as a space where one can sense the joy of creating a thing that way, pleasure of discovering something, worthwhileness of the human development job, or something like these.

In that sense, - today’s theme is how should we produce the classroom space? - I think that the answer is creating learning space that improves the way of spending time in the classroom or the quality of life, beyond the conventional perception of the classroom as a teaching site. Such a space will help students develop feelings such as “I like this school,” “I like this place,” or “I find pleasure in learning in that place.” That will give us a power to constantly try a new education approach or a new learning approach beyond the difference in education methods. Even if we are exhausted sometimes, such a space will give us new vigor to work on new education because we have this space. I think creation of such a resilient education space will lead to creation of a long-lasting school, which is the other task.



被災教室から引っ越し

津波で校舎が損壊した岩手県陸前高田市の市立広田中学校の生徒や教員ら計約70人が新学期に向け、7日朝から、教室を間借りする

ことになった近くの広田小学校まで、椅子や机を運んだ—写真、松本剛撮影—。新学期は20日から。授業は、小学校の理科室や図書室などを間借りして行われる。

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Yomiuri Newspaper

What I will finally present is – I personally saw this in a newspaper; following the Great East Japan Earthquake on March 11, newspapers published photos of sad faces only – this is the first photo showing smiling faces. The smiling faces are expressed as the joy of going to the reopened school and seeing friends after a long interval. I think that our major mission is to work on the creation of a new education space while perceiving anew that the school is such an extremely valuable place for children.

Thank you for your attention.



### III. Closing Remarks

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## Closing Remarks

Takeshi Isoyama, Director, Educational Facilities Research Center,  
National Institute for Educational Policy Research

Thank you very much for attending our Seminar on Educational Facilities Research today, and listening until the end for a long time.

Dr. Itoh presented a lecture on the transition of school building plans in Denmark, operation of class lessons and uses of spaces. I think that the presentation provided suggestions about the relationship between change in class lesson operation and learning spaces.

Ms. Pia Grell Sørensen and Ms. Lene Jensby Lange introduced distinctive approaches about the trends of school designs in Denmark in the light also of political backgrounds. I think that these advanced concepts and designs would provide very helpful perspectives also in school facility plans in Japan.

And, Dr. Nagasawa presented a lecture that gave many suggestions about the ideal form of learning space, including an explanation of the classroom spaces in Japan while tracking back the historical changes with wealth of case examples.

I hope that the three lectures presented today will help create school facilities in the future. In concluding today's event, I would like to express my gratitude to the lecturers who made presentations today, as well as all the guests attending the event. Thank you very much.



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