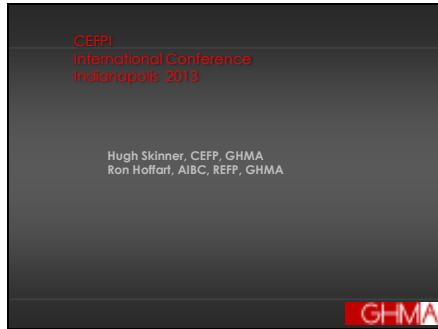
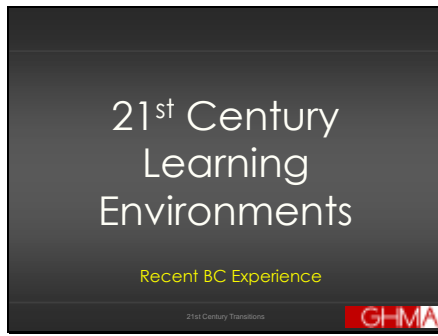


Slide 1



Slide 2



This presentation is to share our experience with University Hill Secondary School which was occupied in January. We also would like to highlight some of the common themes which have been developed for two British Columbia high schools which have not yet been completed.

Slide 3



In addition to University Hill Secondary...

Slide 4



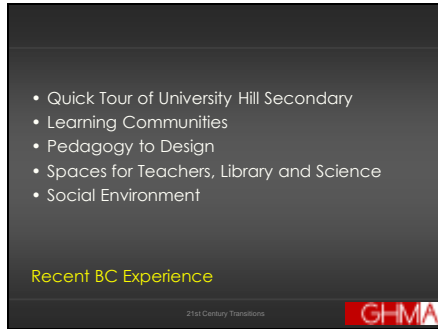
I would like to highlight some of the common approaches that have emerged with other projects also like Centennial Secondary with an enrollment of 1250. It is under construction and...

Slide 5



Glen Lake Secondary a high school of 1200 enrollment. Cefpi Conferences are kind of like meeting with the converted. By now the vocabulary of 21st Century learning, Project based Learning, and The notion of Learning Communities is common currency. These themes have not come full blown out of the blue. Pods of classrooms have been around for 20 years. What is different is that these ideas are being driven by strong wholesale revisions to the pedagogy. These terms mean different things to different architects and different nuances to their clients.

Slide 6



This presentation is to share our experience with University Hill Secondary School which was occupied in January. We also would like to highlight some of the common themes which have been developed for two British Columbia high schools which have not yet been completed.

Slide 7



We'll start with a tour of Uhill. The site is a long narrow one on the UBC Campus. So the building is long and narrow.

Slide 8



About 40 percent of the school is a conversion of a pre-existing office building. We'll start here at the west entry and we will work our way around.

Slide 9



Here we have a portion of the existing structure that we modified for Industrial Ed.

Slide 10



The new area extends east from the yellow south entry

Slide 11



There is a small gym or dance studio, a fitness area and

Slide 12



And a large gym on the south-east end.

Slide 13



Since the tree cover is so heavy I am using this image to show the full north elevation as we head back westward.

Slide 14



The Learning Communities are expressed as separates masses on the north side

Slide 15



this signage is on the prominent street and leads to the north entry – there are four; one at each face

Slide 16



Rainwater is collected on the north side and held in a detention pond. And forms a water course which in summer dries out!

Slide 17



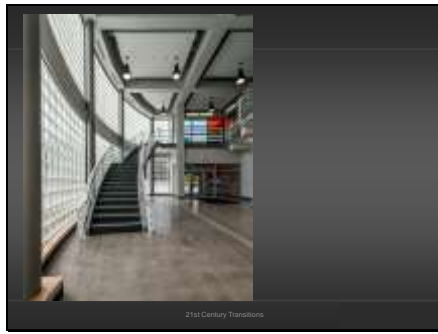
The library and Leaning Commons are expressed as a separate mass as well. I will discuss this more later in the presentation.

Slide 18



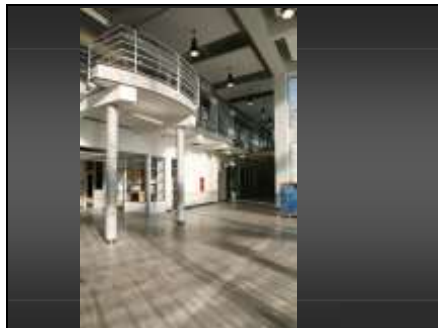
We end back at the west entry.

Slide 19



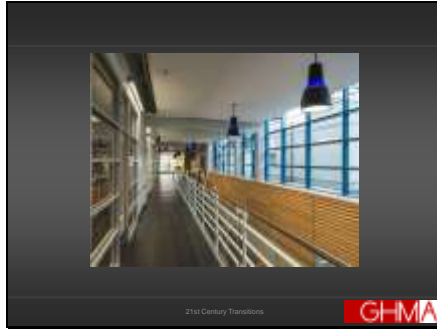
Our interior tour will start here at the west entry

Slide 20



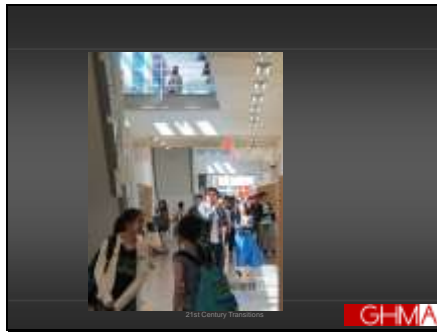
Here are a few images to start our tour of the interior.

Slide 21

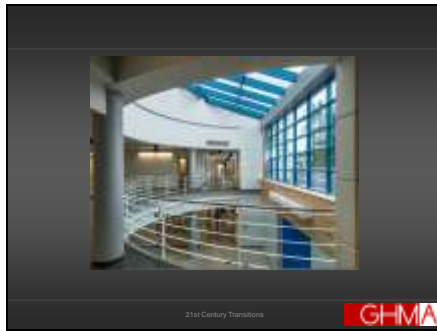


The site demands a long building which we have organized along a two storey sun filled atrium.

Slide 22

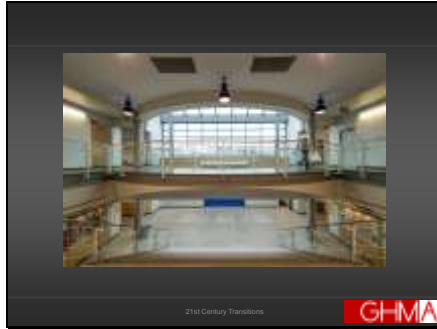


Slide 23



The Rotunda marks the start of the new construction

Slide 24



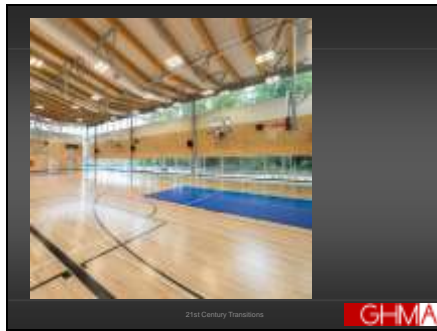
The Central stair at the rotunda leading up to the library

Slide 25



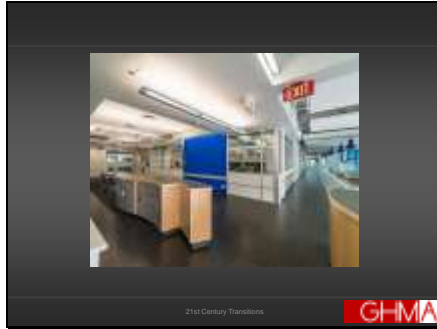
This is the studio. Wood floor, wood acoustic panels and butterfly trusses form the roof.

Slide 26



The same design vocabulary is present in the large gym

Slide 27



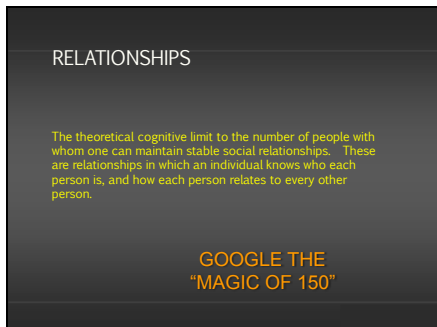
This is an entry to one of the learning communities

Slide 28



Research shows that smaller schools offer students greater opportunities for leadership roles and opportunities for academic growth especially in mathematics and verbal skills.

Slide 29



If you Google the “magic of 150” you will see that a number of successful organization have found 150 to be optimum group size. It seems, at that number, we can know everyone and that it is of sufficient size that in being a member of it there is enough diversity to provide reasons to make membership valuable. Like all true communities, they are based on common interest and common objectives - A common desire to learn in this case. Sharing space and time in a learning community is a catalyst for communication and for building relationships, all of which assist

learning. To be successful, these communities require stability in their membership: you can't have 150 students for forty minutes and another 150 "transients" for the next forty and expect it to function as a community.

Slide 30



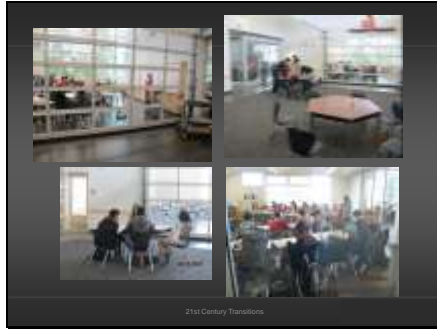
At Uhill the student enrollment of 1000 is divided into seven learning communities; three on the main floor and

Slide 31



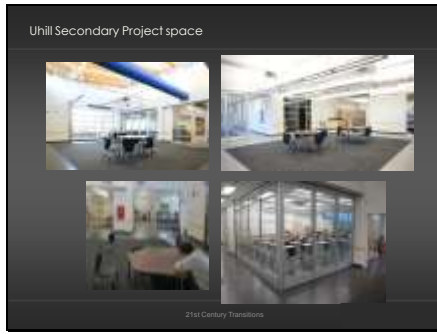
Four on the upper floor. All of these communities have four or five teaching spaces located around a project area.

Slide 32



There is a high degree of transparency

Slide 33



Slide 34



With moveable glass walls and overhead doors a variety of types and sizes of spaces can be created fairly quickly.

Slide 35

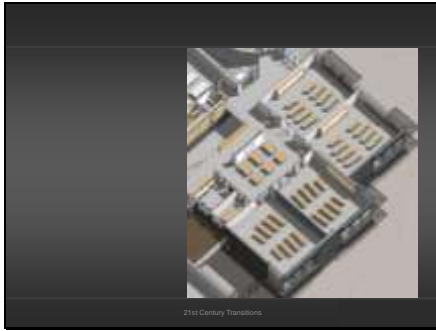


Slide 36



At Centennial there are four learning communities on each floor.

Slide 37

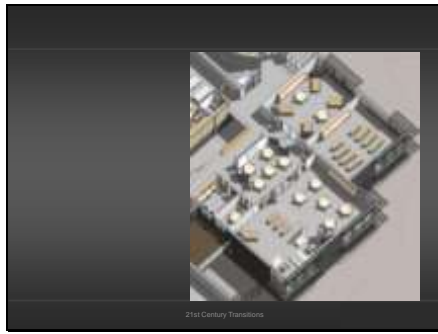


There is transparency and moveable walls. There are no overhead doors at this school out of concern for acoustical separation

Slide 38



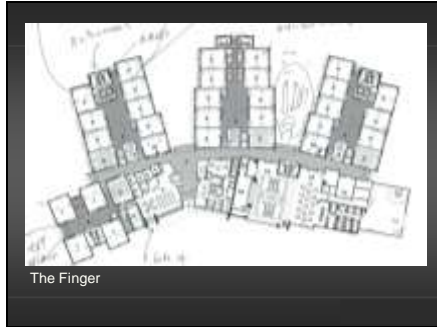
Slide 39



Slide 40



Slide 41



I would like to point out the difference with these and with finger schemes. On these examples each classroom is on a wide corridor and each classroom also has an exterior window. We have received negative feedback on such schemes due to the security aspects of these exterior spaces. These long exterior spaces could be used if there were access to them.

Slide 42



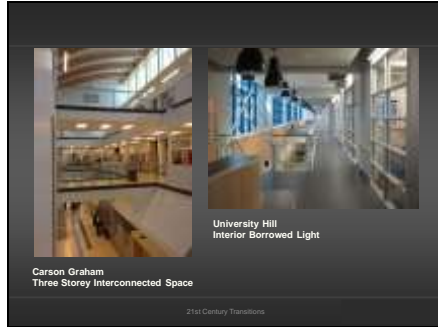
Fewer classrooms helps reduce the depth of this exterior space.

Slide 43



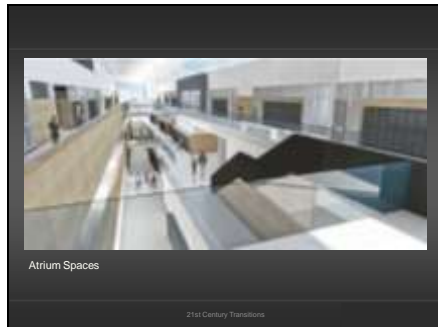
In a non-finger scheme, there are interior classrooms. Their natural light is borrowed from an interior atrium. Developing a plan with borrowed light in some cases requires a mental shift by the client. Some standards are inflexible requiring exterior windows and the atrium space may add to the gross size of the building.

Slide 44



Using borrowed light grew out of the two storey spine at Uhill and although we were worried about the amount of light penetration, in fact as it turns out sun control devices are required on some of the interior windows.

Slide 45



This idea of borrowed light has lead us to the idea of creating interconnected atria.

Slide 46



Which can be sun filled and

Slide 47



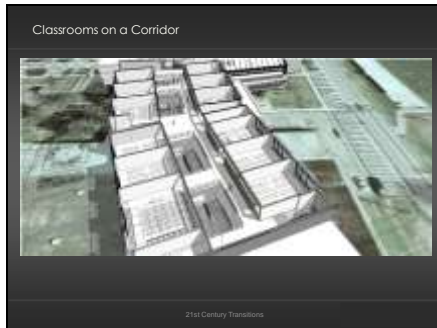
Used for passive ventilation and heat recovery

Slide 48



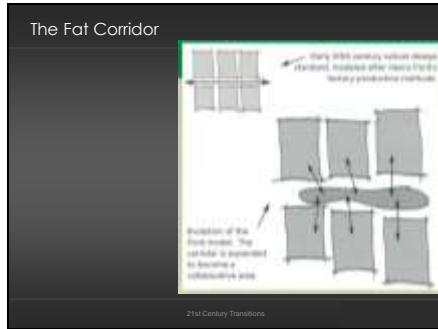
This is the Centennial example here

Slide 49



The examples shown so far can be considered to be a “devolution of the classroom” – by opening up or removing the walls.

Slide 50



Slide 51

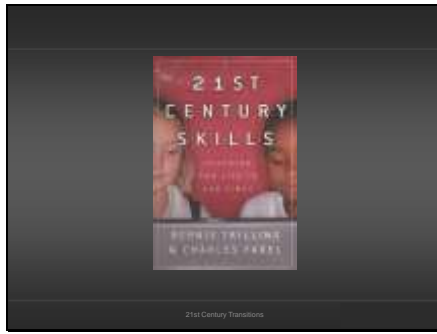


A transformation of the learning environment doesn't stand alone. It really is part of an overall transformation in education. It's not about the space; it's about the learning.

A major part of rethinking Education is to consider the impacts that technology has had on the delivery of Education. Let's start with information – It used to be that the teacher was the source of information and this was passed on. If the student remembered enough of it for an exam, they passed. Right now there is no problem getting information on any subject. In fact with all of the social media available it's like a supercharged information environment.

The challenge now is to apply critical thinking to this almost unlimited access to information. So that when it is said on the internet that the holocaust didn't happen, or the moon landing was shot in a Hollywood backlot, or 9/11 is a hoax, students can learn to apply a rational approach to arrive at a conclusion that is useful and reliable and one that they would want to carry forward.

Slide 52



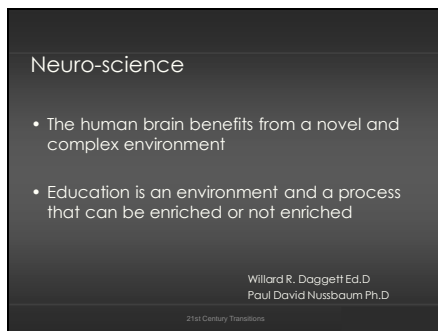
Bernie Trilling and Charles Fadel in their compelling book, “21st Century Skills: Learning for Life in Our Times”, have identified critical thinking as one of the essential skills that our society needs to progress. They indentify skills like collaboration, communication, creativity and cultural awareness as 21st century skills. Skills are learned by doing them. Lectures and coaching help but in the end you have to do it and adjust accordingly. The environments for active learning by doing are different than passive learning by lecture. The kind of spaces for this active learning need to be different

Slide 53



There are new technologies coming and our brain – the learners brain searches these things out

Slide 54



The rapidly developing field of Neuroscience or Brian Research shows that our brain thrives on complex and novel environments. As I mentioned before smaller learning communities reduces stress and as it turns out stress impairs learning. As designers providing novel and stress free environments should be foremost in our approach. At a higher level – the environment is everything not just the physical component

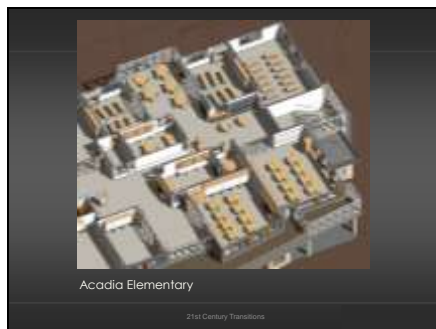
Slide 55



Instead of the devolution of the classroom, another approach is to start fresh, not based on groupings of classrooms but to design a differentiated environment from scratch matching the spaces to the educational pedagogy. This way more difficult since the pedagogy must be delineated and the role and qualities of the physical space need to be developed. This space at Acadia Road Elementary, in Vancouver, is such a space. There are still lecture style spaces and teacher collaboration

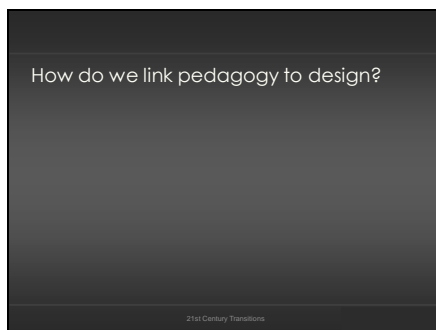
areas. The room sizes can accommodate a variety of group sizes and activities. There can be a greater diversity in the type and the character of the rooms that develop. This room on the corner is a DaVinci Studio where art, science and small tools could be used just like Leonardo did. I say this is harder to design but is way more fun. Both the designers and the educators will be engaged at the highest level.

Slide 56



This space at Acadia is for the same client as Uhill. But this one is a new school with no existing teachers – no existing “culture”. So the VSB was somewhat more adventuresome with this one.

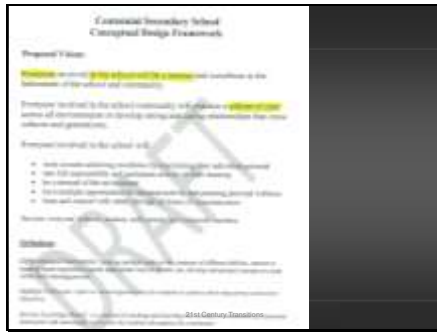
Slide 57



Some school districts within the US have a step called an “Ed Spec” – where the method of Educational Delivery is defined. We don’t have that in BC. Sometimes we go through visioning processes to arrive at a mutually agreed starting point. Some clients are very receptive to new ideas and some not so much. At Uhill the Superintendent of Education published a “Prospectus” as a starting point. And in 2008 this was all new ground. We all attended the International Cefpi Conference in San

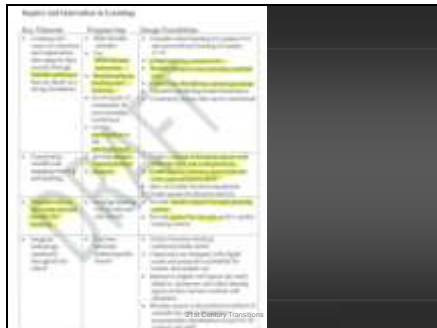
Diego in 2008 and the speakers were Steven Heppel, Frank Locker and Susan Rundle. This was a watershed for us and our clients. At that time High Tech High was the forerunner in new schools.

Slide 58



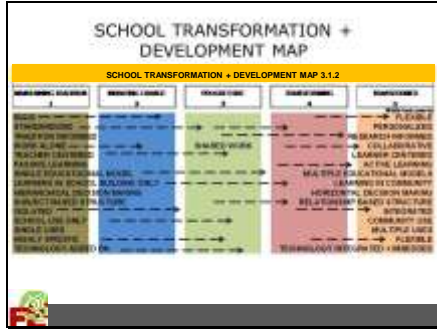
At Centennial a Vision was created which took about a year.

Slide 59



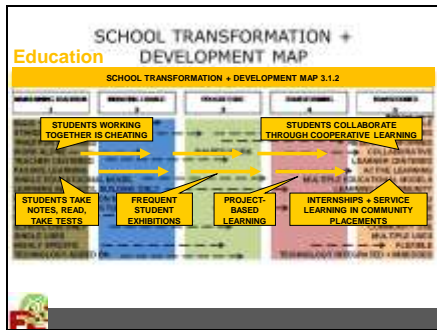
The idea of Learning Communities, Collaborative learning and Project Based learning are all delineated in this vision.

Slide 60



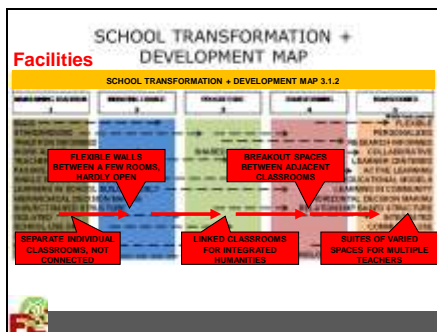
What has become apparent to us is that the spaces we design need to be in sync with the teachers and it is a moving target. Quite obviously there is no pat answer. Frank Locker, an Educational Planner, who needs no introduction, has developed what he calls a School Transformation and Development Map that ties the space to the type of instruction. I encourage you to look up www.Franklocker.com.

Slide 61

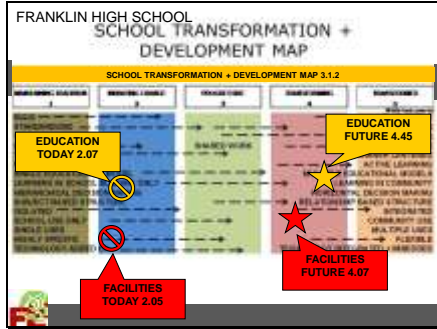


His map links the educational philosophy to the physical environment.

Slide 62

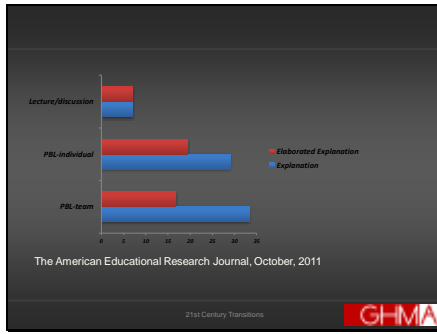


Slide 63



And what is fundamental is that this is a moving target so Flexibility is a major design requirement.

Slide 64



One of the powerful pedagogical ideas that is being developed is Project Based Learning. This graph shows the relative retention and understanding of Project based Learning compared to a lecture style.

Slide 65

Applying 21st Century Learning Skills to Facility Planning
What does Project Based Learning Look Like?



Each unit begins when students are presented with a complex, standards-based problem

Students create a list of things they "need to know" which drives classroom activities


GHMA

Slide 66

Applying 21st Century Learning Skills to Facility Planning
What does Project Based Learning Look Like?



Groups establish roles and norms then begin to assign tasks



Slide 67

Applying 21st Century Learning Skills to Facility Planning
What does Project Based Learning Look Like?





Students use computers, text books, interviews, and experiments to gather information related to their "need to know"




Slide 68

Applying 21st Century Learning Skills to Facility Planning
What does Project Based Learning Look Like?





Teachers continue to help student understand the subject with lectures, assignments, readings and other activities that are tied to the project




Slide 69

Applying 21st Century Learning Skills to Facility Planning
What does Project Based Learning Look Like?





Students create and refine solutions to the problem as they continue to cycle through the stages until they come out.




Slide 70

Applying 21st Century Learning Skills to Facility Planning
What does Project Based Learning Look Like?





Students present their ideas through debates, skits, panels, presentations, etc.

Their work is evaluated by peers, teachers, parents, and community members.




Slide 71

Applying 21st Century Learning Skills to Facility Planning
What does Project Based Learning Look Like?



A critical last step is to give students time to reflect on their learning, on their performance, and provide the teacher with feedback on the project.



Slide 72



21st Century Pedagogies results in some subtle and not so subtle changes to the power structure of the classroom. There is a shift from a teacher centred classroom to a learner focused environment.

Slide 73



In all of our examples we have addressed this shift in power by including a teacher collaboration area in each Learning Community. The idea here is that there will be more teachers than classrooms so that no one will own the classroom.

Slide 74



These images are of the professional area for teachers at UHill. These spaces create the possibilities of teacher collaboration and cross discipline teaching and it also provides for passive supervision and management.

Slide 75



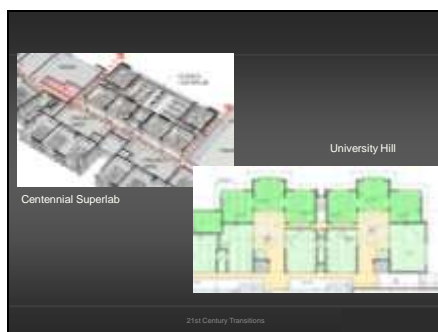
Science represents the very strong notion by a lot of teachers to organize by "departments." In a collaborative, integrated teaching model, science teachers are needed – they are a valuable resource for cross-discipline learning.

Imagine that you are one of the elements of the periodic table – like oxygen, uranium or sulfur. Now how would you get along with other elements – inert, gregarious, volatile and radioactive? In an assignment like this, incorporating English composition and science, the science teachers are essential. Without them it wouldn't work.

The outcome could be a video presentation, a skit or an essay; one not given to the teacher but published to your peers. Peer approval is a stronger motivator.

So we need science teachers.

Slide 76



In all three of our recent high schools there was strong representation to separate the Science Department . As I said we need science teachers- but we also need the space. In an occupancy reconciliation on the existing Centennial Secondary School, it was found that many spaces like science labs are used less than 25% of the time.

At Centennial it turned into a Superlab so that Chemistry, Physics, and Optics share the same space. Shared classrooms are adjacent to the lab space. Biology is tougher to integrate. Each of the Learning Communities at Centennial have a decentralized

science demonstration space as part of it.

Slide 77



At University Hill the science rooms are part of the learning community - but they also are lined up on the corridor. This arrangement seemed to satisfy the need for a 'department.' It also kept them and their rooms within the learning community.

Slide 78

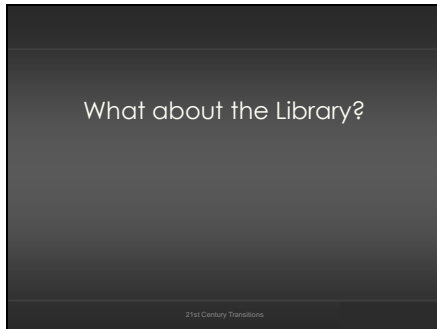


With flexible furniture and plumbing at the perimeter, other subjects like French or Math can be taught in any of these rooms.

Slide 79

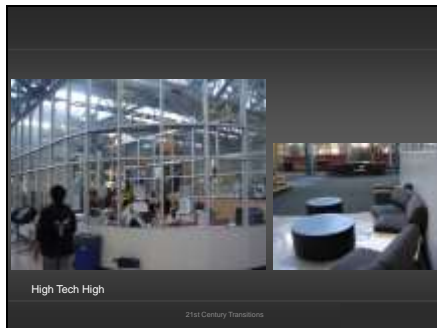


Slide 80



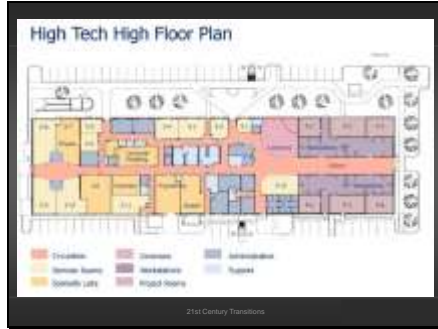
At a CEFPI Presentation in Bellvue Washington, last year, it was observed that in the US public system as the library collections were going down the library attendance was going up. This seems somewhat counter intuitive. Obviously it's not about the books. There is a lot more going on in there. The presenter's analogy was that the former library was like a grocery store and the new model is like a kitchen.

Slide 81



We visited High Tech High in San Diego

Slide 82




This is a plan of High Tech High in San Diego: Note there is no room labeled "classroom." There is also no room labeled "library." On a student directed tour they said that they missed not having a library.

Slide 83

Virtual Learning

Clayton Christensen



- By 2014, 25% of HS courses will be on line
- By 2019, 50% of HS courses will be on line

In schools the library is evolving. It is relevant for self-directed studies and on-line courses. For these students the library becomes a proxy home-room. They can meet other in their cohort and can also meet with their advisors.

Slide 84

Section



Uhill Secondary

At University Hill we have divided the library functions into two.

Slide 85



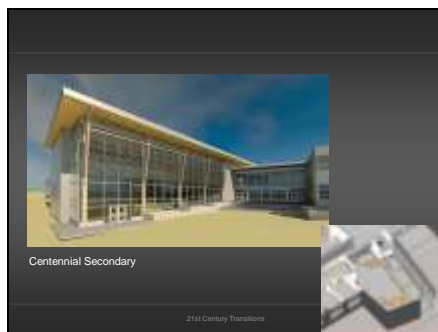
The upper level, where the books are, is intended for quieter, in their words more 'purposeful' activities in a technologically rich area.

Slide 86



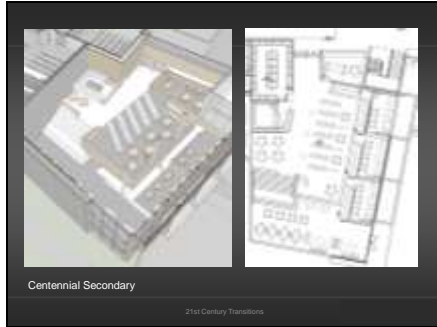
The "learning commons" on the main floor is intended for the informal social part of the library. Group activity takes place here with soft furniture which the students can rearrange. The counselling offices are at the perimeter.

Slide 87

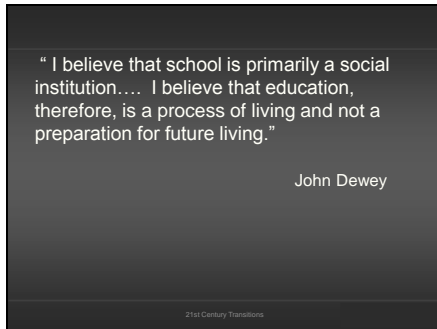


At Centennial the Library is organized as a multi level differentiated space.

Slide 88

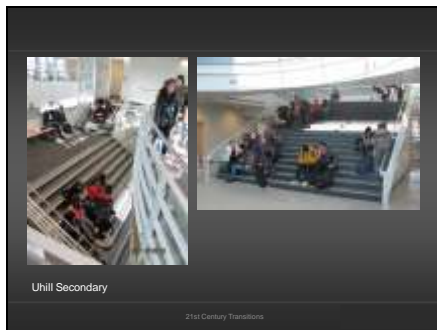


Slide 89



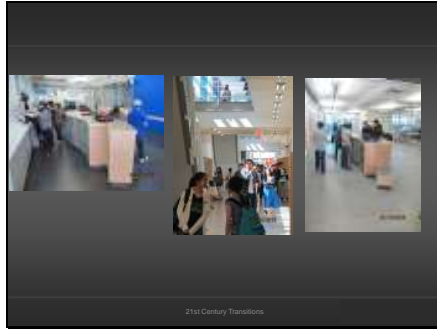
Students are social animals. This is their life. Their mini dramas, crises, joys and accomplishments make up the biggest part of their day. Think of a day going to one classroom then after 40 minutes, going to the next one and so on and so on. Any teenager will tell you, “Like, I have no life.” So we need to find opportunities to promote social interaction.

Slide 90



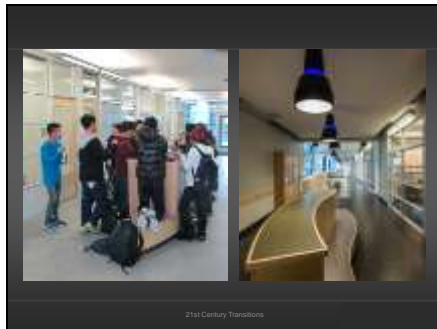
These stairs at the Uhill library is a social magnet.

Slide 91



Locker clusters with seating, changing outlets for electronics provide a social cluster. At Uhill the lockers are grouped to provide identifiable units.

Slide 92



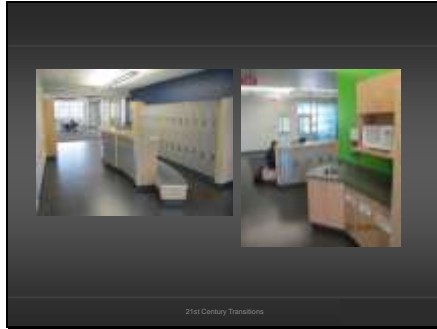
The students sit on them, lie on them, sleep...

Slide 93



At University Hill each learning community has this type of locker bank and a sink and a microwave to heat up lunch.

Slide 94



Randy Fielding calls these “watering holes.”

Slide 95

Summary

- This is a transformation - there is no single solution
- Where is the client on the Transformation Map?
- Learning Communities reduce the scale of the school
- Flexibility is a major design requirement
- Teachers need to be engaged in the process
- The Library is also in transition
- This is a transformation of Learning; its not just about the architecture

21st Century Transitions

In summary:

This is a Process of transformation – there is no single solution

It helps to ascertain where the client is on the Transformation Map

Learning communities help reduce isolation and alienation but also promote leadership skills and form the basis of communication which in turn facilitates learning

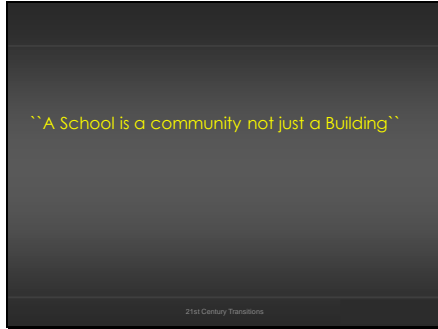
Flexibility is a major design requirement because change is constant

Teachers need to be engaged in this process

The library is also in transition – so is the science department

And finally this is a transformation of education and delivery; it is not just about the space.

Slide 96



Slide 97

