The Changing Architecture of Education

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Introductions

James CC Rice, AIA, LEED AP, NCARB
Energy Positive Program Manager at FirstFloor Energy Positive

David Cupolo, ED.S.
Principal at Saint James Intermediate School
Horry County Schools
Why is the Architecture of Educational Facilities Changing?
Why is the Architecture of Educational Facilities Changing?

Because the needs of Today’s Students have changed
Session Learning Objectives:

- Learn what the Knowledge, Skills, and Life and Career Characteristics of a 21st Century Graduate are.

- Learn how architectural design has evolved to support the student-centered learning environments of today.

- Learn about a variety of environmentally responsible design strategies and how they can be included in your next building project.

- Attendees will walk away with knowledge of how new teaching methodologies coupled with responsive architecture support the required goals of a SC 21st Century Graduate.
Traditional Student Engagement

Curriculum Alignment and Traditional Classroom Layouts

“Teach the Test” vs. “Meet the needs of the Learner”

One size fits all approach - No child left behind, etc.

Very little engagement with or among students

Set Rows / compliance

Very little time for students to explore their curiosity, to be creative, imagine new ideas, and discover new approaches
Today’s Students Defined

PROFILE OF THE
South Carolina Graduate

WORLD-CLASS KNOWLEDGE

Rigorous standards in language arts and math for career and college readiness

Multiple languages, science, technology, engineering, mathematics (STEM), arts and social sciences

WORLD-CLASS SKILLS

Creativity and innovation

Critical thinking and problem solving

Collaboration and teamwork

Communication, information, media and technology

Knowing how to learn

LIFE AND CAREER CHARACTERISTICS

Integrity • Self-direction • Global perspective • Perseverance • Work ethic • Interpersonal skills

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Today’s Students are Tomorrow’s Workforce

Rigorous Curriculum:
Math, ELA, SS, and Science

World Class Skills:
i.e. collaboration, problem solving, creativity, innovation, media & technology, knowing how to learn

Life and Career Characteristics:
Interpersonal skills, global perspective, perseverance, self-direction
What is Teaching Pedagogy?  Art & Science

Teaching “Methodology”

Teaching “Technique”

Teaching “Philosophy”
Why is the shift in Teaching Pedagogy important?

As Students change Pedagogy must too

Shift from Teacher focused Instruction to Student Centered Learning

Changes to Teaching Methods coupled with older Facilities not ideal
What is Design Pedagogy?

Your Process of designing something

“Design Process Methodology”

Our Case Study will include a “Design-Build-Optimize” Pedagogy
Why is Design Pedagogy Important?

As Students Change, Teaching Methods Change, and Facilities Requirements Change.

Just like Teachers need a process to keep up with Students, Designers need a process to fashion buildings to meet these Changes.

Architects need a way to attain and retain information from the end users so they can fashion the buildings properly.
Whether it is Teaching or Designing, some things along the way are the same...

Next, we are going to present the New Horry County Energy Positive Schools as a case study, and describe the journey in the context of a (4) step process.

The (4) step process includes:

1. Curiosity – What is it that you need to do and where will it take you today?
2. Imagination – How do you achieve these goals? Remember that the sky is the limit.
3. Creativity – How do you decide from all your options, the best solution(s) for your scenario?
4. Discovery – This is where you see the results of your efforts, anticipated and unanticipated.
Case Study:

Horry County Energy Positive Schools
Horry County, South Carolina - 2015 - 2020

Curiosity, Imagination, Creativity, Discovery
Changes to Educational Specifications have required Changes in School Design to support the new ways of learning.
Design Requirements

“The mission of Horry County Schools, diverse communities united in their focus on learning, is to guarantee that all students are fully prepared, successful contributors in a rapidly changing global society through the aggressive pursuit of personalized, achievement-based, student-centered teaching and learning.”

Tailor the building to meet the requirements of a 21st Century Graduate
Included in the published Educational Specifications were several “educational space types vignettes”.

These were prepared to graphically convey the design intent of the new teaching methodologies to the various design teams working for the District.

The following space types are examples right from the Horry County Schools Educational Specifications.
Individual Study and Technology

Typical Traditional Individual Study Carrels

New “I-Bars” replace the standard study carrels and are rich with technology, and encourage collaboration.
New Flexible Classrooms replace Traditional

Typical Traditional Classroom

New Flexible Classrooms include Creative Furniture layouts and alternative wall conditions
Traditional labs become more flexible
“Maker’s Spaces” added to the Program
Lecture Halls become Learning Theaters

Traditional Lecture Hall

Lecture Hall transformed
Breakout and Collaboration – Smaller Scale
Breakout and Collaboration – Larger Scale
Outdoor spaces for teaching and study
Outdoor spaces for teaching and study
Traditional school plan layouts are typically Linear

Sandy Grove Middle School follows a traditional arrangement of spaces along a circulation path.

Typical double loaded corridor at Sandy Grove
Traditional school plan layouts are typically Linear

Special program spaces are treated pretty much the same as all the others arranged along the line.
Traditional linear arrangement was modified.

The floor plans for the New Middle Schools evolved into a “hybrid” scheme. Special program spaces were moved to the interior and the scheme became more Centralized. Giving the special spaces more prominence by making them central to the scheme “re-assigned” their priorities architecturally and was in keeping with the spirit of the new Guidelines.
Traditional linear arrangement was modified.

The floor plans for the New Elementary School also evolved into a “hybrid” scheme. Special program spaces were again moved to the interior and the scheme became more Centralized.
Pre-Manufactured Central Energy Plant
Pre-Manufactured Central Energy Plant

Air Handlers

Pumps

Electrical and Controls Panels
Energy Wise Clubs facilitate Engagement
Energy Wise Clubs facilitate Engagement
Energy Positive is Discovery
Solar Panels produce Renewable Energy
Solar Panel Installation
Green Power supports Community Engagement
Engagement leads to...

- **Engaged students are 2.5 times more likely to say that they get excellent grades** and do well in school, and they are 4.5 times more likely to be hopeful about the future than their actively disengaged peers.

- **Employee engagement has been linked to a wide range of workplace outcomes.** Specific to schools, teacher engagement has a strong relationship to both absenteeism and employee turnover, and is a key driver of student engagement.

Socastee Elementary School

Substantial Completion:
August 2017

Project Duration:
1 year, 8 Months

Building Area:
137,955 SF

Student Capacity:
916

Cost per SF:
$286.00

Delivery Method:
Architect Led Design-Build
Saint James Intermediate School

Substantial Completion: August 2017

Project Duration: 1 year, 8 Months

Building Area: 170,784 SF

Student Capacity: 1,200

Cost per SF: $260.00

Delivery Method: Architect Led Design-Build
Ten Oaks Middle School

Substantial Completion: August 2017

Project Duration: 1 year, 8 Months

Building Area: 170,784 SF

Student Capacity: 1,200

Cost per SF: $252.00

Delivery Method: Architect Led Design-Build
Myrtle Beach Middle School

Substantial Completion:
December 2017

Project Duration:
1 year, 9 Months

Building Area:
170,784 SF

Student Capacity:
1,200

Cost per SF:
$250.00

Delivery Method:
Architect Led Design-Build
Socastee Middle School

Substantial Completion: April 2018

Project Duration: 1 year, 6 Months

Building Area: 150,606 SF

Student Capacity: 800

Cost per SF: * $269.00

Delivery Method: Architect Led Design-Build
Sandy Grove Middle School
President John F. Kennedy was visiting NASA headquarters for the first time in 1961. While touring the facility, he introduced himself to a janitor who was mopping the floor and asked him what he did at NASA.

"I'm helping to put a man on the moon!"

The janitor got it. He understood the vision, his part in it, and he had purpose.
Contact Information

James CC Rice, AIA, LEED AP, NCARB
Energy Positive Program Manager at FirstFloor
email:  jrice@firstfloor.com
phone:  843-421-9783

David Cupolo, ED.S.
Principal at Saint James Intermediate School
email:  dcoopphd@gmail.com
phone:  843-467-5826