

Career and Technical Education Strategies for the High School Learning Environment

Educational specifications for
planning and design



“

North Clackamas School District and DLR Group would like to thank all who participated in the planning and programming process. This process has been successful as a result of the comments, suggestions, feedback, time, and hard work of many people.

”

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Executive Summary

This Educational Specification is a direct reflection of the discussions, action, and overall process regarding the composition of a 21st Century, Career and Technical Education (CTE) Learning Environment for North Clackamas School District (NCSD). To match the educational environment of NCSD's CTE program to the district's aspirations, the project team engaged trade professionals, NCSD leadership and staff, and students in a series of discovery exercises. Ultimately, the exercise results informed the overarching goals for future reference by architects, school designers, curriculum planners, and district stakeholders.

The process began with exploration of global trends relevant to students' futures, examination of alternative education methodologies and environments, and tours of schools throughout Oregon and Washington. The information collected across several activities is the foundation upon which all future design and curriculum decisions will be supported. Space types to support each program, organizational strategies, and program efficiencies for this new learning environment were developed with input from several NCSD students and staff, DLR Group, and industry team members. Similarly, collaboration with NCSD staff resulted in the team arriving at 980 SF to 1,080 SF for class spaces, pending specific CTE program assignment, which is above the NCSD district standard of 900 SF.

The culmination of all project team and process participants' efforts are reflected in each program's featured pages. Each program is represented by program diagrams, precedent imagery, and a tabular program area breakdown. Finally, the efforts of each program is to continue to promote the importance of Applied Learning and CTE programs, which is defined and supported in the following pages.

"About 90 percent of students in our district take at least one [CTE] class. Not surprisingly, we also have a higher graduation rate than the state average. Students in most other school districts aren't lucky enough to have what North Clackamas students have and many have no CTE."

- Deborah Barnes

Ed Spec participant and Broadcasting & Social
Media/Journalism Teacher



"How do we
effectively teach
outside of the space?"
- Karen Phillips, Principal

Design Advisory Team (DAT)

Karen Phillips	NCSD - Sabin-Schellenberg Professional Technical Center Principal
Mark Lynch	NCSD - Manufacturing Engineering Teacher
Cindy Quintanilla	NCSD - Executive Director of Community Relations
Kathy Mayfield	NCSD - Agriculture Teacher
Robert Parker	NCSD - Architecture & Design Teacher
Rochelle Harper	NCSD - Digital Design Teacher
Julie Coleman	NCSD - Secretary
Todd Koebke	NCSD - Culinary Arts Teacher
Lyn Gray	NCSD - Health Services Teacher
Robbie Christner	NCSD - Automotive Teacher
Shaun Stuhldryer	CBRE Heery - Project Manager

Focus Groups

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Elaine Hudson Murray	Wayne Sellevaag	Patrick Iaboni	Liberty Lacy

Bond Steering













Matt Utterback	Superintendent
Ron Stewart	Assistant Superintendent
Tiffany Shireman	Chief of Staff
David Hobbs	Capital Projects Director
Gordon Odette	CBRE Heery
Cindy Quintanilla	Executive Director of Community Relations

DLR Group

Todd Ferking	Principal in Charge
Larry McManus	Project Manager
Michael Fletcher	Architecture
Brett Dearing	Interior Designer
Jill Maltby	Ed Spec Production









PROGRAMS SUMMARY

Program Summary

	Program Area	# Proposed Classroom Spaces	Proposed Net SF
	Agriculture	2	22,880
	Architecture and Design	1	1,920
	Automotive Service Technology	1	11,840
	*Aviation (Lite + Full)	7	14,850
	Broadcasting & Social Media	-	5,420
	Business Management & Sports	4	6,940
	*Construction Trades (Lite + Full)	1	13,180
	Cosmetology	3	6,390
	Culinary	3	10,590
	Digital Design (includes Animation)	-	3,840
	Early Childhood/Teacher Education Pathway	4	6,040
	Electronics Technology	2	3,930

* denotes program not available at NCSD

general restrooms included in GSF, space-specific restrooms included in program

	Fire Science	1	2,090
	Forestry	1	1,200
	Health Services	3	7,980
	Law Enforcement	1	3,764
	Manufacturing and Engineering	1	15,670
	PACE	4	6,200
	Programming and Coding	-	1,200
	Translation and Interpretation	SHARED	SHARED

EDUCATION SUPPORT

Administration	-	10,948
Community Use	-	2,820
Shared Exhibition	-	2,600
Shared Maker Space	-	4,250
Non-CTE Space	-	EXISTING TO REMAIN
General Storage (portables GSF)	-	EXISTING TO REMAIN

Total Net SF	166,542
Mechanical	4.00%
Walls / Partitions	9.00%
Structure	2.00%
Circulation / Restrooms	10.00%
Total Gross SF	208,178

* denotes program not available at NCSD

general restrooms included in GSF, space-specific restrooms included in program

PROGRAMS SUMMARY

Comprehensive CTE Area Tabulation

Agriculture

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
AG1.1	Classroom	Classroom	32	980	1	980
AG1.2	Lab	Flex Lab	32	1,200	1	1,200
AG1.3	Office and Prep	Office		180	1	180
AG1.4	Main Barn	Specialized Learning	32	3,000	1	3,000
AG1.5	Feed Distribution	Support				
AG1.6	Feed Storage	Storage		1,200	1	1,200
AG1.7	Veterinary Lab	Flex Lab	32	1,200	1	1,200
AG1.8	Sheep Barn	Flex Lab	32	1,600	1	1,600
AG1.9	Sheep Feed Structure	Support		1,200	1	1,200
AG1.10	Cattle feed Structure	Support				
AG1.11	Shade Greenhouse	Specialized Learning		3,800	1	3,800
AG1.12	Heated Greenhouse	Specialized Learning		3,800	1	3,800
AG1.13	Fodder Greenhouse	Specialized Learning		200	1	200
AG1.14	Shop	Support		900	1	900
AG1.15	Caretaker	Support		1,200	1	1,200
AG1.16	Store	Support		200	1	200
AG1.17	Lockers	Support		300	2	600
AG1.18	Pig Barn	Flex Lab		1,200	1	1,200
AG1.19	Laundry	Support		120	1	120
AG1.20	Equipment Shed	Support		1,152	1	-
AG1.21	Quarantine Barn	Support		300	1	300
Total Net SF						22,880

PROGRAMS SUMMARY

Comprehensive CTE Area Tabulation

Architecture & Design

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
AD1.1	Design Studio	High Intensity Lab	32	1800	1	1800
AD1.2	- Direct Instructional Area	High Intensity Lab		800	1	
AD1.3	- Maker Space Lite	High Intensity Lab		400	1	
AD1.4	- Computer	High Intensity Lab		600	1	
AD1.5	Storage	Support		120	1	120
Total Net SF						1,920

Automotive Service Technology

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
AU1.1	Auto Bays	Specialized Learning	36	5,000	1	5,000
AU1.2	Diesel Bay	Specialized Learning	36	800	1	800
AU1.3	Classroom	CTE Classroom	36	1,080	1	1,080
AU1.4	Level 1 Lab	High Intensity Lab	36	1,800	1	1,800
AU1.5	Flex Lab	Flex Lab	36	1,400	1	1,400
AU1.6	Inspection Lab	Support		300	1	300
AU1.7	Storage - Tools	Support		300	1	300
AU1.8	Storage - General	Support		400	1	400
AU1.9	Locker Room	Support		300	1	300
AU1.10	Customer Waiting Area	Support		300	1	300
AU1.11	Office	Medium Office	1	1	1	160
AU1.12	Outdoor Bay	Outdoor		600	1	
Total Net SF						11,840

PROGRAMS SUMMARY

Comprehensive CTE Area Tabulation

Aviation Lite

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
AVL1.1	Flex Lab	Flex Lab	32	1,400	1	1,400
AVL1.2	Classroom	CTE Classroom	32	1,080	1	1,080
AVL1.3	Welding	Support		200	1	200
AVL1.4	Shop Area	Support		200	1	200
AVL1.5	Compressor	Support		150	1	150
AVL1.6	Storage - General	Support		200	1	400
AVL1.7	Storage - Parts	Support		200	1	400
AVL1.8	Tools Crib	Support		300	1	300
AVL1.9	Office	Small Office		120	1	120
AVL1.10	Lockers	Support		300	1	300
Total Net SF						4,550

Aviation Full

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
AV1.11	Flex Lab	Specialized Learning	32	5,000	1	5,000
AV1.12	Flex Lab	Flex Lab	32	1,400	1	1,400
AV1.13	Welding	Support		300	1	300
AV1.14	Paint	Support		400	1	400
AV1.15	Composites	Support		400	1	400
AV1.16	Inspection Lab	Support		300	1	300
AV1.17	Battery	Support		100	1	100
AV1.18	Shop Area	Support		400	1	400
AV1.19	Sheet Metal	High Intensity Lab	32	1,200	1	1,200
AV1.20	Storage - General	Support		400	1	400
AV1.21	Storage - Parts	Support		400	1	400
Total Net SF						10,300

PROGRAMS SUMMARY

Comprehensive CTE Area Tabulation

Broadcasting & Social Media

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
BR1.1	Broadcasting Studio	High Intensity Lab	32	1,800	1	1,800
BR1.2	Storage	Support		150	1	150
BR1.3	Green Screen	Support		200	2	400
BR1.4	VR / Sports Broadcasting Lab	Flex Lab	32	1,200	1	1,200
BR1.5	Computer / Animation Lab	Flex Lab	32	1,200	1	1,200
BR1.6	Radio Station	Support		400	1	400
BR1.7	Sound Editing Booth	Support		50	3	150
BR1.8	Office	Support		1	120	120
Total Net SF						5,420

Business Management & Sports Marketing

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
BUS1.1	Classroom	Classroom	32	980	3	2,940
BUS1.2	Flex Computer Lab	Flex Lab	35	1140	2	2,280
BUS1.3	Independent Work Area	Classroom	8	800	1	800
BUS1.4	Conference Room	Meeting Space	8-10	240	1	240
BUS1.5	Student Store	Support		400	1	400
BUS1.6	Storage	Support		280	1	280
Total Net SF						6,940

PROGRAMS

Comprehensive CTE Area Tabulation

Construction Trades - Lite

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
CT1.1	Construction Lab	High Intensity Lab	32	4,200	1	4,200
CT1.2	Tool Room	Support		200	1	200
CT1.3	Material Storage	Support		400	1	400
CT1.4	Construction Yard	Outdoor				
CT1.5	Design Lab	Flex Lab	32	1,400	1	1,400
CT1.6	Classroom	CTE Classroom	32	1,080	1	1,080
CT1.7	Student Property Storage	Support		200	3	600
CT1.8	Lockers	Support			2	
CT1.9	Changing Room	Support		500	1	500
Total Net SF						8,380

Construction Trades - Full

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
CT1.10	Applied Environmental Science Lab - HVAC	Specialized Learning	32	4,200	1	4,200
CT1.11	Tool Room	Support		200	1	200
CT1.12	Material Storage	Support		400	1	400
Total Net SF						4,800

Cosmetology

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
CS1.1	Salon	Specialized Learning	36	2,800	1	2,800
CS1.2	Point of Sale / Waiting Area	Support		250	1	250
CS1.3	Salon Storage	Support		200	1	200
CS1.4	Classroom	Classroom	36	980	3	3,140
Total Net SF						6,390

PROGRAMS

Comprehensive CTE Area Tabulation

Culinary

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
CU1.0	Flex Kitchen					
CU1.1	- Flex Kitchen	Flex Lab	32	1,200	1	1,200
CU1.2	- Classroom	Classroom	32	980	1	980
CU1.3	- Storage	Support		200	1	200
CU1.4	- Refrigeration	Support		50	1	50
CU2.0	Production Kitchen					
CU2.1	- Demonstration Area	Support		600	1	600
CU2.2	- Commercial Kitchen	High Intensity Lab	32	1,200	1	1,200
CU2.3	- Dining / Restaurant	Flex Lab		1,800	1	1,800
CU2.4	- Classroom	Classroom	32	980	1	980
CU2.5	- Storage	Support		140	1	140
CU2.6	- Refrigeration	Support		180	1	180
CU2.7	- Dishwashing	Support		120	1	120
CU3.0	Café					
CU3.1	- Kitchen	High Intensity Lab		860	1	860
CU3.2	- Prep	Support		400	1	400
CU3.3	- Seating	Support	30	600	1	600
CU3.4	- Storage	Support		300	1	300
CU3.5	- Classroom	Classroom	32	980	1	980
Total Net SF						10,590

PROGRAMS

Comprehensive CTE Area Tabulation

Digital Design

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
DD1.0	Design Studio	High Intensity Lab	32	1,800	2	3,600
DD1.1	- Direct Instructional Area			800		-
DD1.2	- Maker Space Lite			400		-
DD1.3	- Computer			600		-
DD1.4	Storage	Support		120	2	240
Total Net SF						3,840

Early Childhood/Teacher Education Pathway

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
EC1.1	Reception	Support		400	1	400
EC1.2	Classroom	Classroom	24-32	980	2	1,960
EC1.3	Flex Classroom	Classroom	24-32	980	2	1,960
EC1.4	Observation Area	Support	3-6	300	1	300
EC1.5	Toilet Room	Support		80	2	160
EC1.6	Outdoor Play	Outdoor		960	2	
EC1.7	Kitchenette	Support		400	1	400
EC1.8	Office	Office		150	3	450
EC1.9	Conference Room	Meeting		260	1	260
EC1.10	Laundry	Support		150	1	150
Total Net SF						6,040

Electronics Technology

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
EL1.1	Classroom	CTE Classroom	32	1,080	2	2,160
EL1.2	Computer Lab	Flex Lab	32	1,200	1	1,200
EL1.3	Tool Room	Support		300	1	300
EL1.4	QC Inspection Room	Support		120	1	120
EL1.5	Tool Storage	Support		150	1	150
EL1.6	Independent work area	Support	18	600	0	-
Total Net SF						3,930

PROGRAMS

Comprehensive CTE Area Tabulation

Fire Sciences

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
Fire1.1	Classroom	Classroom	32	980	1	980
Fire1.2	Lockers / Uniform Storage	Support		150	1	150
Fire1.3	Indoor Fire Truck Storage	Support		480	2	960
Total Net SF						2,090

Forestry

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
FR1.1	Classroom	CTE Classroom	32	1,080	1	1,080
FR1.2	Storage	Support		120	1	120
FR1.3	Exterior Lockable Storage	Support		300	1	
FR1.4	Forestry Competition Course	Outdoor			1	-
FR1.5	Wood Cutting & Storage	Support			1	-
Total Net SF						1,200

Health Services

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
HC1.1	Classroom	Classroom	35	980	3	2,940
HC1.2	Skills Lab	Flex Lab	22	1,200	1	1,200
HC1.3	Lab	Flex Lab	35	1,200	1	1,200
HC1.4	Research Commons	Classroom		800	1	800
HC1.5	Physical Therapy Studio	CTE Classroom		1,000	1	1,000
HC1.6	Meeting Space	Meeting	8-10	240	1	240
HC1.7	Storage	Support		200	1	200
HC1.8	Team Office	Large Office	4	400	1	400
Total Net SF						7,980

PROGRAMS

Comprehensive CTE Area Tabulation

Law Enforcement

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
LE1.1	Classroom	Classroom	32	980	1	980
LE1.2	Agility Classroom	Flex Lab	32	1,200	1	1,200
LE1.3	Storage	Support		300	1	300
LE1.4	CSI Room	Classroom		960	1	960
LE1.5	Indoor Police Vehicle Storage	Support		162	2	324
Total Net SF						3,764

Manufacturing & Engineering

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
MF1.1	Tooling	High Intensity Lab	36	2,800	1	2,800
MF1.2	Welding	High Intensity Lab	36	1,800	1	1,800
MF1.3	Fabrication	Specialized Learning	36	5,000	1	5,000
MF1.4	CTE Classroom	CTE Classroom	36	1,080	1	1,080
MF1.5	Flex Lab	Flex Lab	36	1,400	1	1,400
MF1.6	Inspection Lab	Support		300	1	300
MF1.7	Storage	Support		400	1	400
MF1.8	Compressor	Support		150	1	150
MF1.9	Tools Crib	Support		300	1	300
MF1.10	Outdoor Area	Outdoor				-
MF1.11	Office	Small Office	1	120	2	240
MF1.12	Lockers	Support		300	1	300
Professional Welding Training Area						
MF1.13	Welding Training Area	High Intensity Lab		800	1	800
MF1.14	Welding Training Classroom	CTE Classroom	36	1,100	1	1,100
Total Net SF						15,670

PROGRAMS

Comprehensive CTE Area Tabulation

PACE

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
PC1.1	Flex Classroom	Classroom	8-10	980	2	1,960
PC1.2	Lunch Room	Support	10-20	400	1	400
PC1.3	Office	Small Office	1	120	1	120
PC1.4	Infant Classroom	Classroom	10-20	980	1	980
PC1.5	Toddler Classroom	Classroom	24-32	980	2	1,960
PC1.6	Toilet Room	Support		80	2	160
PC1.7	Observation	Support	2-3	200	1	200
PC1.8	Laundry	Support		120	1	120
PC1.9	Storage	Support		150	1	150
PC1.10	Mother's Room	Support	1	150	1	150
Total Net SF						6,200

Programming and Coding

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
PC1.1	Classroom	Flex Lab	32	1,200	1	1,200
Total Net SF						1,200

Translation & Interpretation

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
TI1.1	Classroom	Flex Lab	32	1,200	0	SHARED
Total Net SF						SHARED

PROGRAMS

Comprehensive CTE Area Tabulation

Administration

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
AD1.1	Waiting Area	Support	8-10	300	1	300
AD1.2	Reception	Medium Group	2-4	400	1	400
AD1.3	Work & Copy Room	Support		300	1	190
AD1.4	Mail & Receiving Room	Support		230	1	230
AD1.5	Conference Room	Meeting Space	10-12	300	1	300
AD1.6	Small Group	Meeting Space	6-8	80	1	80
AD1.7	Office - Principal	Medium Office	1-2	330	1	330
AD1.8	Office	Individual		150	10	1,500
AD1.9	Records - Supply Storage	Support		200	1	200
AD1.10	IT Support	Medium Group	1-2	400	1	400
AD1.11	IT Storage	Support		200	1	200
AD1.12	Unisex ADA Toilet Room	Support		80	1	80
AD1.13	Staff Break Room	Medium Group	5-10	300	1	300
AD1.14	Mother's Room	Individual	1	150	1	150
Total Net SF						10,948

Shared Community Use

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
CU1.1	Dining Commons	Assembly Space		2,500	1	2,500
CU1.1	Community Conference Room	Medium Group		320	1	320
Total Net SF						2,820

PROGRAMS

Comprehensive CTE Area Tabulation

Shared Exhibition

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
EX1.1	Flex Exhibition Space	Assembly Space	200-300	2,400	1	2,400
EX1.2	- Storage	Support			1	150
EX1.3	Pop-up Exhibition Spaces	Support			4	50
EX1.4	Student work display areas	Support				
Total Net SF						2,600

Shared Maker Space (per program use noted in program spreads)

	Space Use	Space Type	Capacity	NSF	QTY	Total NSF
MS1.0	Fabrication - Dirty	High Intensity Lab		600	1	600
MS1.1	Design & Fabrication - Clean	High Intensity Lab		1,800	1	1,800
MS1.2	Design & Animation Lab	Flex Lab		1,200	1	1,200
MS1.3	Materials Storage	Support		300	1	300
MS1.4	Project Storage	Support		200	1	200
MS1.5	Project Display	Support		150	1	150
Total Net SF						4,250

OPTIONS MATTER

Science

Technology

Engineering

Art

Mathematics

STEM, STEAM, and Career and Technical Education (CTE) primarily compose what the industry recognizes as Applied Learning. All facets of Applied Learning work to prepare students for the future by connecting secondary education with both college expectations and labor market demands. These programs offer students the unique opportunity to create pathways for future professional success by exposing them to applied sciences, modern technologies, and trade skills.

The transformation of teaching and learning to a balanced curriculum of both theoretical and applied learning is fostering everything from the “maker movement” to STEM, STEAM, and CTE. These programs are growing in popularity, and their ability to engage and connect students is helping redefine how space is designed. A robust co-design process empowers teachers, students, school leaders, architects and others to co-create transformational learning experiences that leverage flexible, adaptive, personalized, learner-centered spaces.

Applied Learning looks beyond secondary school, encouraging students to become lifelong learners. It benefits students by giving them:

- industry accreditation
- real-world relevance in curriculum
- leadership development through student organizations
- dual credit options
- peer-to-peer and student-to-teacher collaborative environments
- lab spaces to translate from theoretical to practical application

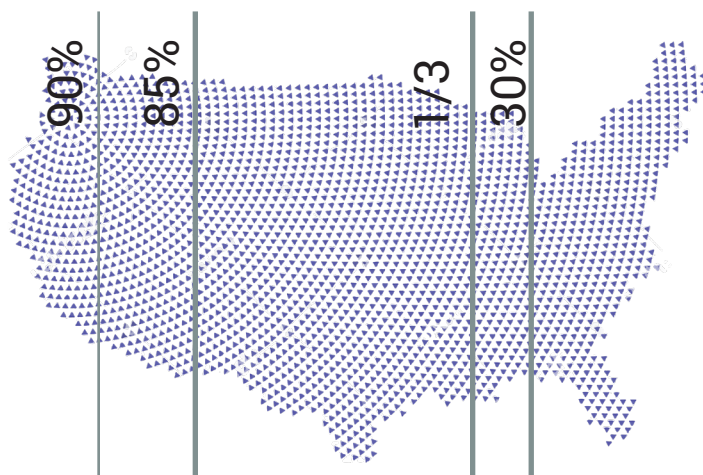
NOTICEABLE BENEFITS

* Students of the creative economy will likely experience career pivoting over their lifetime. As the pull of an ever-changing economy connects with a push from students striving to create their own pathway toward advancement, school districts of all shapes and sizes are experiencing a cultural transformation. The one-size-fits all mindset that once permeated our education system is steadily being replaced with personalized learning programs, allowing for a more student-centric approach that supports success and encourages engagement.

A NEW GENERATION

"THE PUSH OF Z"

Generation Z, those born from 2004 to the present, will enter a workforce increasingly integrated with many disciplines and skill set requirements. To meet these expansive demands, a growing number of students are seeking out high school programs that allow them to carve a clear pathway to certificates and degrees.



3 yrs

average length of time in a job

1/3

full career change (ages 25-33)

76%

want their jobs to be their hobbies

90% of graduates report wishing they had more real-world opportunities in high school

85% or more of CTE students are planning to continue with post-secondary education

1/3 or more of students have the opportunity to receive college credit through CTE

30% of dual enrollments in the US are in CTE courses

GEN Z JOBS OF 2020



»Genetic Counselor
»Elder Care Worker



»Cyber Security Specialist



»Sustainability Professional



»Vertical Farmer
»Statistician



»Precision Tool Maker

PROCESS OVERVIEW

PROCESS OVERVIEW

1 Project Kickoff

06.06.17 Outlined the process by which the DAT, or steering committee, would use to complete its work. Please find phase completion dates tied to each featured activity.

2 Future Thinking

09.05.17 Participants defined guiding principles and endeavored to imagine the needs and expectations of a student far into the future.

School Tours

09.27.17

- Cascadia Technical Academy
- Clark College
- Sno-Isle TECH
- Sandy High School
- Northwest College of Construction

3 Programmatic Connections

10.11.17 Participants explored opportunities and synergies between programs.

4 Efficiencies

10.26.17 Summarized anticipated overlaps into formalized diagrams for further examination.

5 Focus Groups

10.31.17
11.03.17

- Architecture & Design, Digital Design, and Programming & Coding
- Health Services
- Culinary Arts
- Automotive Service Technology
- Business Management & Sports and Entertainment Marketing, Broadcasting & Social Media
- Administrative
- Office, Custodial
- Agriculture, Forestry
- Cosmetology, Law Enforcement, & Fire Science
- Early Learning, PACE
- Manufacturing & Engineering and Electronics Technology



GUIDING PRINCIPLES

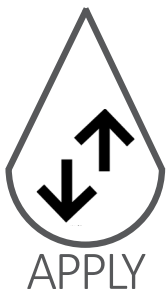


Flexibility + Adaptability

- expandability – infrastructure and space for future growth
- balance specialized space with flexible space
- building supports changes in equipment & technology over time

Programmatic Connections

- cross pollination of programs
- visibility and supervision

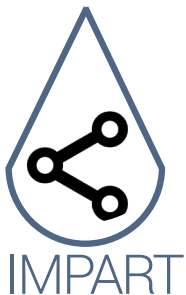


Transparency

- clear path, layout and accessibility to all students

Community Connections

- shared resources between school and industry
- marketing through community storefronts, retail flavor
- create spaces that are intended for community interaction
- industry training: spaces that are accessible to community



Sustainable Design

- the building serves as a teaching tool
- high indoor environmental quality
- progressive and responsible design and materials

PROCESS OVERVIEW

[illegible]

1
Goals
Sept 5, 2017

- Project Kickoff
- Project Goals
- Day in the Life

2
Tours
Sept 27-28, 2017

- School Tours

3
Needs
Oct 11

- Needs and Potentials

4
Scenarios
Oct 26

- Scenarios

5
Focus Groups
October 31
Nov 1

- Specific Requirements

6
Finalize
Nov 16



"This activity continued to influence and inform the steering committee's work in the workshops that followed. We thought about technology and spaces students in 2035 would need to support their learning: flexible facilities that are easy to change, cutting edge technology, virtual learning environments, and opportunities for small group settings."

- Karen Phillips,
Principal

PROCESS OVERVIEW

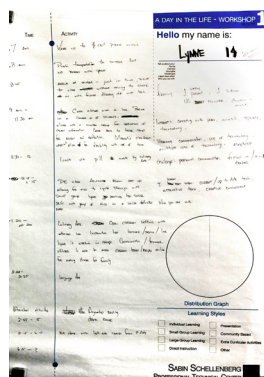
Workshop 2: 'A Day in the Life'

Teams worked to illustrate two student profiles in order to extract measures of success and language to start to communicate the project to others.

Questions considered:

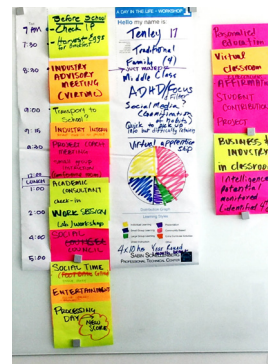
- "What is the world like in 2035?"
- "What opportunities and challenges does your student face?"
- "How has environment changed from today?"

Lynne, 14



- » Lynne has 1 parent and 1 sibling
- » She loves sports, music, her friends, and uses technology to communicate and keep updated on her interests.
- » She has a well-rounded curriculum which includes Culinary Arts, one of her many interests, which has allowed her to help her family with cooking.

Tenley, 17



- » Tenley is from a family of 4, has ADHD, and is socially awkward, which could be attributed to playing online games.
- » She meets virtually with an Industry Advisory Mentor, as she is technologically savvy, everyday.
- » She is seen as "The Giver" and helps out her peers with work through the Social Council.

Takeaways:

- Students spend a significant portion of their day in one on one, or small group settings often moving between work settings fluidly.
- Students have an adult advocate whom they meet with regularly. These adults are either teachers or industry mentors.
- Students are engaging with content or teams while on the move, i.e. via mobile phone on the bus.
- Students experience a blended virtual and hands-on learning experience.

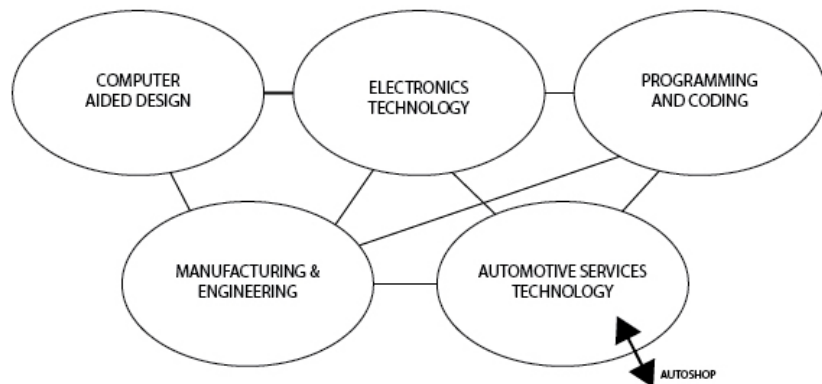
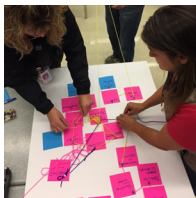
PROCESS OVERVIEW

Workshop 3: Programmatic Overlaps

One of NCSD's guiding principles is to prioritize programmatic connections and efficiencies. In two groups, participants sought to expose overlaps in order to maximize spatial connections.

Initial analysis revealed the following adjacencies :

- » Architecture & Design, Marketing, Digital Design, and Business
- » Manufacturing, Programming & Coding, and Automotive
- » Robotics, Electronics, and Business
- » Culinary Arts, Cosmetology, Automotive Service Technology, Manufacturing & Engineering,
- » Architecture & Design, and Digital Design
- » Early Learning, PACE, and Health Services



example programmatic overlap graphic:

TAKEAWAYS:

- » design clusters and human service clusters emerged
- » some programs have an opportunity to overlay on many programs, i.e. business
- » project-based learning is an opportunity to explore program connections, i.e. robotic arm project involving manufacturing, electronics, and coding.

PROCESS OVERVIEW

Tours

Cascadia Technical Academy

Location:

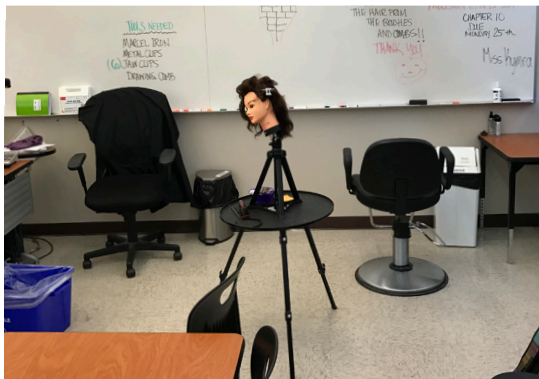
12200 NE 28th Street, Vancouver, WA 98692

Description:

CTA provides CTE experience for 1,200 students to 10 school districts in Southwest Washington.

Visitor Highlights:

Visitors appreciated cosmetology and aviation spaces in new buildings, which feature great light, clerestories, and airy spaces.



PROCESS OVERVIEW

PROCESS OVERVIEW

Tours

Sno-Isle TECH

Location:

900 Airport Road, Everett, WA 98201

Description:

Similar to CTA, Sno-Isle TECH provides access to technical skills education to students across 14 local school districts near Everett, WA.

Visitor Highlights:

Visitors appreciated the entry sequence and meeting space, student display cases and recognition, wayfinding, banquet spaces / restaurant, teaching kitchen separate from the production kitchen, safety awareness, teaching by showing, and equestrian facility.



PROCESS OVERVIEW

Tours

Sandy High School

Location:

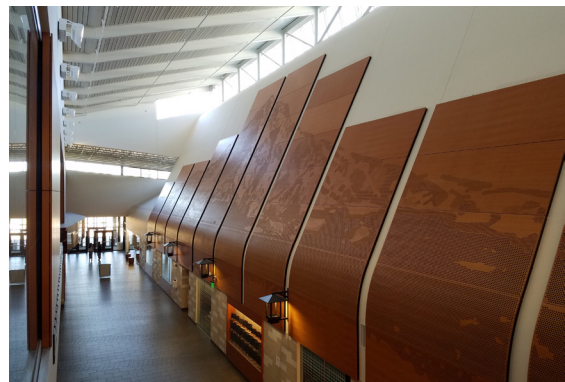
37400 Bell Street, Sandy, OR 97055

Description:

Located in Sandy, Oregon, Sandy High School provides access to 6 CTE programs for students to enroll in.

Visitor Highlights:

Visitors appreciated use of wood, glass, and steel, break out space frequency, large corridors, wayfinding, graphics, use of light, shop bathrooms, access control through classrooms, separate teaching and instructional spaces, audio reinforcement, and music systems.



PROCESS OVERVIEW

Tours

Clark College

Location:

1933 Fort Vancouver Way, Vancouver, WA 98663

Description:

With enrollment nearly 13,000 students strong, Clark College provides STEM and technical education in Southwestern Washington.

Visitor Highlights:

Visitors appreciated the new STEM facility, exposed systems throughout and radiant heating system exposure for instruction, entry sequence, materials, and wayfinding, manufacturing space, use of kill switches where applicable, and the automotive shop.



PROCESS OVERVIEW

Tours

Northwest College of Construction

Location:

8111 NE Holman Street, Portland, OR 97218

Description:

Located in Portland, Oregon, the NWCOC focuses on craft, technical, supervisory, and management skills for those interested in careers involving the construction industry.

Visitor Highlights:

Ideal storage of construction materials and deconstruction of assemblies for instruction.



PROCESS OVERVIEW

PLANNING CONSIDERATIONS

Flexibility & Adaptability

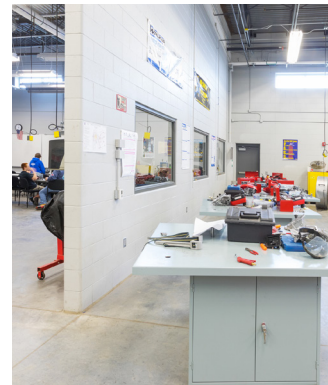
Creating learning environments that are easily adaptable to changing modes of use are of paramount importance. Spaces should be planned to allow for varying degrees of adaptability over time, from immediate/daily user modifications such as moveable walls and furniture to substantial modifications such as reconfiguration of spaces. A robust electrical and mechanical infrastructure should also be designed with future flexibility in mind.



Pictured: Tahoma Regional Learning Center

Transparency

Transparency plays a fundamental role in establishing a learning environment that supports a stronger sense of community. The intent is to provide a visual and experiential connection to a larger group. High levels of transparency also improve supervision and security, by creating an environment where learning is pervasive and visible.



Pictured: Crete High School, Metea Valley High School, and Kearney High School

Collaboration

The ability to collaborate and communicate are essential skills that everyone will need in order to compete in the global workplace. The learning environment should reinforce this by creating opportunities for students, teachers, and community to work together in a collaborative way. Collaboration is essential for building relationships.

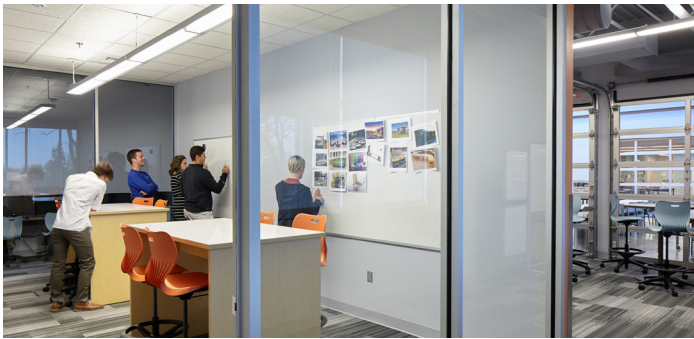


Pictured : Kearney High School

PLANNING CONSIDERATIONS

Display of Student Work

Student work is at the core of the educational process and should be celebrated. Maximize opportunities throughout the school for the display of student work. Display cases, digital displays, and vertical surfaces should be available throughout the school. Displaying work will enhance the sense of ownership for both students and staff and allow students to identify with the spaces in which they learn.



Pictured: Lawrence Public School, and Blue Valley CAPS

Social Space

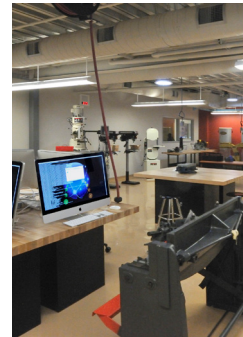
Interaction and socialization is an integral part of the learning process. Environments that are diverse in size and activity will be provided to address the social needs of all students to ensure a feeling of belonging and safety. Student pride and ownership are enhanced through a stronger sense of inclusion. These spaces will ideally be located to maximize supervision and allow student and staff interaction in a more informal environment. Spaces can be easily adapted to meet the needs of various users and personalization will be encouraged.



Pictured: Crete High School, Crete High School, and Blue Valley CAPS

Technology

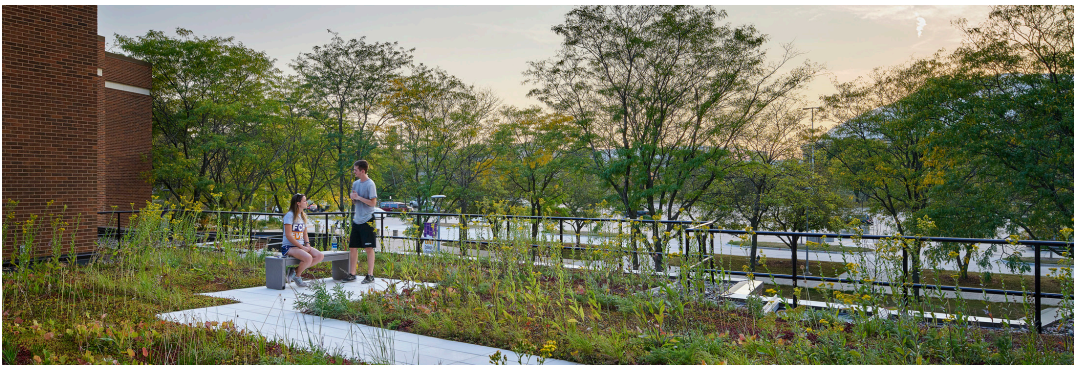
Access to technology resources should be abundant throughout. Technology supports the education, and thus should be as flexible as possible. Learning spaces should encourage collaboration and group work with high access to digital technology. Wireless connectivity inside and out is ideal.



Pictured: CAPS Center for Advanced Professional Studies Accelerator, and PVUSD C.R.E.S.T High School Addition

Sustainability

Sustainability will be a key factor in all decisions regarding learning environments and operational effectiveness. Student performance will be enhanced through the inclusion of daylighting, natural ventilation, and other strategies. The operational effectiveness of the facility will be considered in addition to material and system selections with consideration to maintenance and ease of operation. The use of local materials will celebrate the spirit of the community and decrease overall costs. Sustainable strategies should be visible and apparent to support instruction.



Pictured: University of Northern Iowa - Schindler Education Center

PLANNING CONSIDERATIONS

Outdoor Connections

The engagement of spaces beyond traditional learning environments is critical in a quest toward making learning transparent. Outdoor areas will be provided for teaching, social interaction, mentoring, and performance. Natural light and fresh air will be provided in learning environments to enhance student and staff performance. The natural characteristics of the site and the surrounding environment will be celebrated.



Pictured: Marysville Getchell High School



Safety

As CTE programs continue to take root across the United States, student populations engaging with real world technologies will increase. It's imperative that these spaces allow for adequate clearances for students to actively engage with the technologies for enhanced skill application and development. Similarly, as schools often have a definitive role in the enhancement of the surrounding community, these spaces must also be accessible to community members and industry professionals. With access beyond the teacher and student, security is key in allowing for connections beyond the school, yet maintaining a high level of space quality and technology able to serve all types of users for the foreseeable future.



Pictured: West MEC Building B



Sightlines

With the increased amount of anticipated activity that naturally comes with the presence of a 21st Century Career and Technical Education facility, spaces are typically much larger to accommodate opportunity for as many as possible. With larger spaces can often come reduced transparency and visual access. Every space should be composed with strategies that elevate visual access in support of increased activation and security. The employment of sightlines to aid in function and safety is beneficial for all space users.



Pictured: Tahoma Regional Learning Center

PLANNING CONSIDERATIONS

Real World Relevancy

21st Century CTE Learning does not simply manifest as job readiness. CTE is advancing students to experiences spanning beyond a career. Exposure to several means and methods allows for a multi-faceted sounding board from which to spring to action and affect social change. The programs offered strive to communicate trade-specific opportunities, but also highlight where bounds between trades are traversed. Leveraging program overlap fosters a culture of embracing collaboration through remaining adaptable to, and appreciative of, change.



Pictured: Laramie County School District #1

Community

For a true CTE program to be successful, the knowledge of industry partners must be accessible. Sharing these spaces beyond the teachers and students is not only beneficial to those enrolled, but also to community members that compose the urban fabric within which such a school chooses to exist. One without the other eliminates meaning, evidencing that close ties with the community are key in current and future plans. Spaces should augment existing, key relationships. In turn, the community will develop alongside the major strides each program has in store.



Pictured: Sandy High School

SPACE TYPES

The Importance of Space Types

With an expected minimum life span of 50 years, a school will inevitably undergo changes throughout its life. Change may be technological, spatial, and /or academic. The design of educational facilities must consider how a facility will change over time. The typical school program is a list of highly specialized spaces with very specific requirements that are seemingly inflexible and can be very difficult to modify over the life of the building. The design team has attempted to distill the typical specialized space types into 9 “generic” spatial types that can accommodate various configurations and uses. It is believed that by distilling spaces back to the essential characteristics, spaces can be more easily changed to a different use at later date. This section details the 9 distilled space types.

Reconfigurable Space

FLEXIBILITY



AGILITY



ADAPTABILITY



NCSD Stats

948

TEACHERS

896

STAFF

32

SCHOOLS

17,320

STUDENTS

SPACE TYPES

SUPPORT - Office / Meeting

120 SF ₂

individual
small office
think tank
huddle
storage

180 SF ₈

small group
medium office
conference
copy room
work room
storage

500 SF ₁₈

medium group
large office
meeting
conference

Single Height Spaces - Low Intensity Lab / Flex Lab

980 SF ₃₀

classroom
demonstration
lab
design studio

1,080 SF ₃₃

CTE classroom
demonstration
lab
design studio
fabrication

1,200 -1,400 SF ₃₃

flex lab
culinary arts
studio
engineering lab
manufacturing lab

Double Height Spaces - Flex Lab / High Intensity Lab

1,800 - 2,800 SF ₅₆

high intensity lab
maker space
stations /
demonstrations
broadcasting

2,800 - 5,000 SF ₇₅

specialized learning
auto / body shop
manufacturing
construction lab

5,000 SF - , UNENCLOSED _x

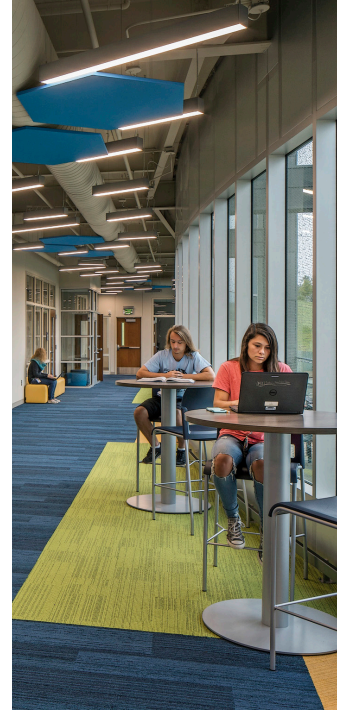
support / outdoors
vehicle storage
vehicle demonstrations
covered/uncovered storage
materials holding

SPACE TYPES

SPACE TYPES

Individual

Characteristics: intimate, formal and informal, flexible furnishings, equipped with technology, transparent or opaque, private or semi-private, acoustical separation



Pictured: Marketing Lab MLPS and Omaha Henry Doorly Zoo Conservation Academy

Size: 120 SF

Activities and Uses: temporary use and sharing by various programs/staff using the adjacent shared learning spaces

Services: video, voice communication, power and data located for maximum flexibility

Furniture, Fixtures, and Equipment: movable furniture and fixtures, small meeting table, guest chair

Access: easy access and visibility

Considerations: accessible after hours, lockable room

Small Group

Characteristics: formal or informal, flexible furnishings, technology equipped, transparent, full to partial acoustical privacy



Pictured: Joplin 11th & 12th Grade Interim Campus

Size: 180 SF

Activities and Uses: variable functions with unique needs of each CTE Program, supportive of collaborative culture

Services: video, voice communication, power, and data located for maximum flexibility

Furniture, Fixtures, and Equipment: movable furniture and fixtures, small meeting table, guest chairs, moveable display, tackable, and projection surfaces

Access: easy access and visibility from learning spaces

Considerations: physical walls or flexible furniture to define spaces

SPACE TYPES

Medium Group

Characteristics: intimate, formal and informal, flexible furnishings, equipped with technology, transparent or opaque, private or semi-private, acoustical separation



Pictured: North Seattle Community College Student Services Center

Size: 500 SF

Activities and Uses: variable functions with unique needs of each CTE program, supportive of collaborative culture

Services: video, voice communication, power and data located for maximum flexibility

Furniture, Fixtures, and Equipment: movable furniture and fixtures, small meeting table, moveable display, tackable surfaces, wireless technology, digital display, writable surfaces

Access: easy access and visibility to and from learning spaces

Considerations: physical walls or flexible furniture to define spaces that promote and enhance collaboration and collegiality

Classroom

Characteristics: formal, flexible furnishings, equipped with technology, transparent or opaque, private or semi-private, acoustical separation



Pictured: Benedictine University Goodwin School of Business

Size: 980 SF

Activities and Uses: variable functions with unique needs of each CTE program, supportive of collaborative culture

Services: video, voice communication, power, and data located for maximum flexibility

Furniture, Fixtures, and Equipment: movable furniture and fixtures, lockable file storage, small meeting table, moveable display, tackable surfaces

Access: easy access and visibility from learning spaces

Considerations: physical walls or flexible furniture to define spaces that promote and enhance collaboration and collegiality

SPACE TYPES

CTE Classroom

Characteristics: formal, flexible furnishings, equipped with technology, transparent or opaque, private or semi-private, acoustical separation



Pictured: Yavapai College - Chino College of Agribusiness and Science Technology Center

Size: 1,080 SF

Activities and Uses: variable functions with unique needs of each CTE program, supportive of collaborative culture

Services: video, voice communication, power, and data located for maximum flexibility, access to water

Furniture, Fixtures, and Equipment: movable furniture and fixtures, lockable file storage, small meeting table, movable display, tackable surfaces

Access: easy access and visibility from learning spaces, typically connected to lab or shop, direct access to outdoors is desirable

Considerations: physical walls or flexible furniture to define spaces that promote and enhance collaboration and collegiality

Flex Lab

Characteristics: formal or informal, flexible furnishings, technology equipped, transparent, acoustical privacy



Pictured: Crete High School

Size: 1,200 - 1,400 SF

Activities and Uses: project-based and experimental learning that may require additional mechanical and electrical service, more durable finishes and acoustical separation from other learning environments; support interdisciplinary teaming, demonstration, lecture, discussion, study and synthesis, and modeling

Services: video, voice communications, power and data located for maximum flexibility (220v service), sinks, zoned lighting controls, exhaust, 2-way comm system with intercom, synchronized clock system, and wireless network access

Furniture, Fixtures, and Equipment: movable student workstations, tables and equipment, moveable storage units

Access: easy access to classrooms as required, direct access to outdoor learning space with extra wide opening for transportation of raw materials and/or finished projects

Considerations: visible connection to learning environment, flexible location of "teaching wall", audio enhancements as necessary to allow full group and multiple small group student work, day-lighting controls, opportunities to display student work; extension of the studio spaces for projects, presentations, teaming, and collaboration

SPACE TYPES

High Intensity Lab

Characteristics: formal or informal, flexible furnishings, technology equipped, transparent, partial acoustical privacy



Pictured: Joplin High School

Size: 1,800 - 2,000 SF

Activities and Uses: project-based and experimental learning that may require additional mechanical and electrical service, more durable finishes and acoustical separation from other learning environments as well as support interdisciplinary teaming, demonstration, lecture, discussion, study and synthesis, and modeling

Services: video, voice communications, power and data located for maximum flexibility (220v service), sinks, zoned lighting controls, exhaust, 2-way comm system with intercom, synchronized clock system, and wireless network access

Furniture, Fixtures, and Equipment: movable student workstations, tables and equipment, moveable storage units

Access: easy access and visibility from learning spaces, direct access to outdoor learning space with extra wide opening for transportation of raw materials and/or finished projects

Considerations: visible connection to learning environment, flexible location of "teaching wall", audio enhancements as necessary to allow full group and multiple small group student work, day-lighting controls, opportunities to display student work; extension of the studio spaces for projects, presentations, teaming, and collaboration

Specialized Learning

Characteristics: intimate, formal and informal, flexible furnishings, equipped with technology, transparent or opaque, private or semi-private, acoustical separation



Pictured: Crete High School

Size: 2,800 - 5,000 SF

Activities: project-based and experimental learning that can support interdisciplinary teaming, demonstration, lecture/presentation, small performance

Services: hot/cold water; video, voice communication, power, and data located for maximum flexibility, zoned lighting controls for various activities, 2-way communication system with intercom, synchronized clock system, wireless network access, ceiling mounted drop cord reels for power tools and mobile equipment, power strips and/or outlets at perimeter walls, above counter height for power tools, equipment and instructional technology (separate circuit for technology and A/V equipment), 110 and 220 volt outlets as necessary for equipment (3-phase power); independent room ventilation system, exhaust direct to outside only with no return air to main building ventilation system; negative pressurization with regard to adjacent indoor spaces; large shop sink, hose bib, water fountain, floor drain under emergency shower/eyewash; dust collection system to include ceiling drops and dust sweep drops as necessary, central vacuum system desirable, task lighting as necessary.

SPACE TYPES

Specialized Learning

FFE: movable student work stations, movable storage units, display and storage of books/resources, whiteboard and projection technology; exposed ceiling or hanging grid for displays and student work; project assembly work tables with heavy duty tops, student stools, mobile material/project carts, wall pegboard, tack surface; ceiling-mounted retractable projection screen; hand wash solution and towel dispenser, portable marker board/projection surface, full height lockable storage cabinets for supplies, materials and student projects, recycling station

Access: easy access and visibility from learning spaces, and storefront, direct access to/from the outside to promote extended use as desired to support the curriculum, access to storage for supplies and projects

Safety (as required by designated programs but may include): button-activated emergency shutoff of all power reels from two locations, painted safety line on floor around equipment and power tools (as necessary); emergency shower/eyewash; safety station with fire extinguisher, fire blankets and first-aid supplies, wall-mounted hearing protection and goggle station (may require access to power); additional requirements TBD

Considerations: daylighting controls, durable finishes, acoustical treatments; easily reconfigured space; welcoming entry from outside, visual access throughout room and from adjacent spaces for supervision, lockable door with enhanced security as necessary; can be used as an extension of the learning centers for projects, presentations, teaming/collaboration, large group work, etc; audio enhancement as necessary



Pictured: Tahoma Regional Learning Center

Outdoors

Characteristics: large space, sometimes covered to protect from elements, enclosed for security, accessible for storage, operation of large equipment, and exercises requiring large expanses of space beyond high bay spaces



Pictured: Sandy High School

Size: 5,000 + SF

Activities and Uses: large storage and demonstration space, storage for materials larger than interior capacity can allow

Services: voice communication, exterior lighting controls for various activities, wireless network access, exterior power,

Furniture, Fixtures, and Equipment: fixed storage units / shelves, display and storage of vehicles and operable equipment, overhead shelter (some lockable, some not), full height lockable storage cabinets / weatherproof, adequate materials storage, potential student project storage, recycling station

Access: access and visibility from fabrication labs and adjacent large specialized learning spaces, access to storage for supplies and projects

Safety (as required by designated programs but may include): button-activated emergency overhead doors where applicable, painted safety line on ground / equipment and vehicle clearance notation (as necessary)

Considerations: durable surfaces, overhead shelter longevity / weatherproofing; visual access through labs and from adjacent spaces for supervision

PROGRAMS

2017-2018



Agriculture

Animal Science 1-3
Advanced Agricultural Research
Agriculture Intern



Architecture & Design

Design Concepts
Architecture & Design 1-3



Automotive Services / Technology

Auto Upkeep
Automotive Services Technology 1-3
Auto Service Technology Intern



Broadcasting & Social Media

Radio Broadcasting
Sports Broadcasting
Broadcasting & Social Media 1-3



Business Management / Sports Marketing

Finance 1
Accounting 1-2
Business & Management 1-2
Sports & Entertainment Marketing 1-2
Entrepreneurship: Business Incubator
Business & Management Intern



Cosmetology

Cosmetology Concepts
Cosmetology 1-3



Culinary Arts

Intro: Culinary Arts
Culinary Arts 1-3
Culinary Intern



Digital Design

Graphic Design 1-3
2D Animation



Early Childhood

Survey of Early Childhood
Working with Children
Careers with Children in Early
Childhood Ed.
Careers with Children in
Elementary Ed.



Electronics Technology

Intro: Electronics Technology\
Exploring Electronics
Electronics Technology 1-3



Fire Science

Fire Protection 1-2



Forestry

Forestry 1-3



Health Science

Health Care Trends\
Survey of Health Sciences
Health Sciences 1
Health Sciences 2: Internships
Health Sciences 2: Seminar

“ Which programs have the ability to cross-educate? (i.e. Business & Culinary, Welding & Automotive, etc.) ”



Law Enforcement

Law Enforcement 1-3
Crime Scene Investigation



Manufacturing & Engineering

Intro: Manufacturing & Engineering
Engineering Robotics
Manufacturing & Engineering 1
Manufacturing & Engineering 2-4
Machining
Manufacturing & Engineering 2-4
Fabrication & Welding
Manufacturing & Engineering
Welder Qualification
Manufacturing & Engineering
Intern



Programming & Coding

Intro to Programming & Coding
Programming & Coding 1



Translation & Interpretation

Translation and Interpretation

FUTURE PROGRAMS CONSIDERATIONS



Construction Trades

TBD



Aviation

TBD

COMMON CHARACTERISTICS

INFRASTRUCTURE

DISPLAY OF WORK

COLLABORATION

SAFETY

Sightlines
Supervision
Zoning

ENVIRONMENTAL
QUALITIES

Daylighting
Heating
Cooling
Ventilation
Acoustics

TRANSPARENCY

BRANDING

REAL WORLD
ENVIRONMENT

OUTDOOR
CONNECTIONS

COMMUNITY USE /
INTERACTION

PROGRAMS

PROGRAMS



AGRICULTURE



Photo by: NCSD

AGRICULTURE

Courses in this program offer exposure to varying facets of the agricultural industry including management and care of, production cycles, and business strategy for plants, small animals, and large animals. Future Farmers of America (FFA) participation and agriculture leadership programs also lend to noticeable professional access. College credit is available in this program.

Direct job applicability is noted for the following careers: Ag Science Technicians • Farmers & Ranchers • Ag Managers • Soil & Plant Scientists • Zoologists • Wildlife Biologists

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

28,600 GSF
1 caretaker

CHARACTERISTICS

- modular
- flexible, durable holdings
- varying level of observation

SPACE SPECIFICS & EQUIPMENT NEEDS

- provide modular / reconfigurable pens to allow for flexibility in sizing of pens
- ensure appropriate separation of animal areas and pastures
- position barn and feed structures to provide maximum access and control of pastures
- provide access for tractor in all barns
- provide sound reinforcement throughout, especially in all barns and outdoor teaching areas
- sheep barn and feed structure could be combined into one structure
- all barns to be provided with adequate hose bibs connections for cleaning
- feed structure could possibly be combined with cattle feed
- provide area for observation outside the main pen area (i.e. bleacher seating for 30)
- provide access for tractor through the entire structure

Programs



Agriculture students as provided by NCSD shown above.

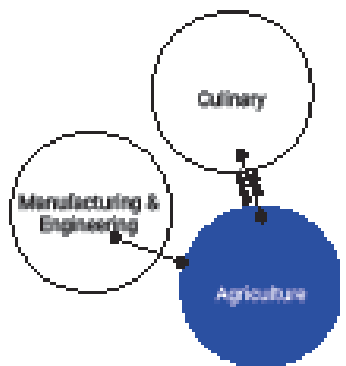


Agriculture students as provided by NCSD shown above.

PROGRAM BREAKDOWN:

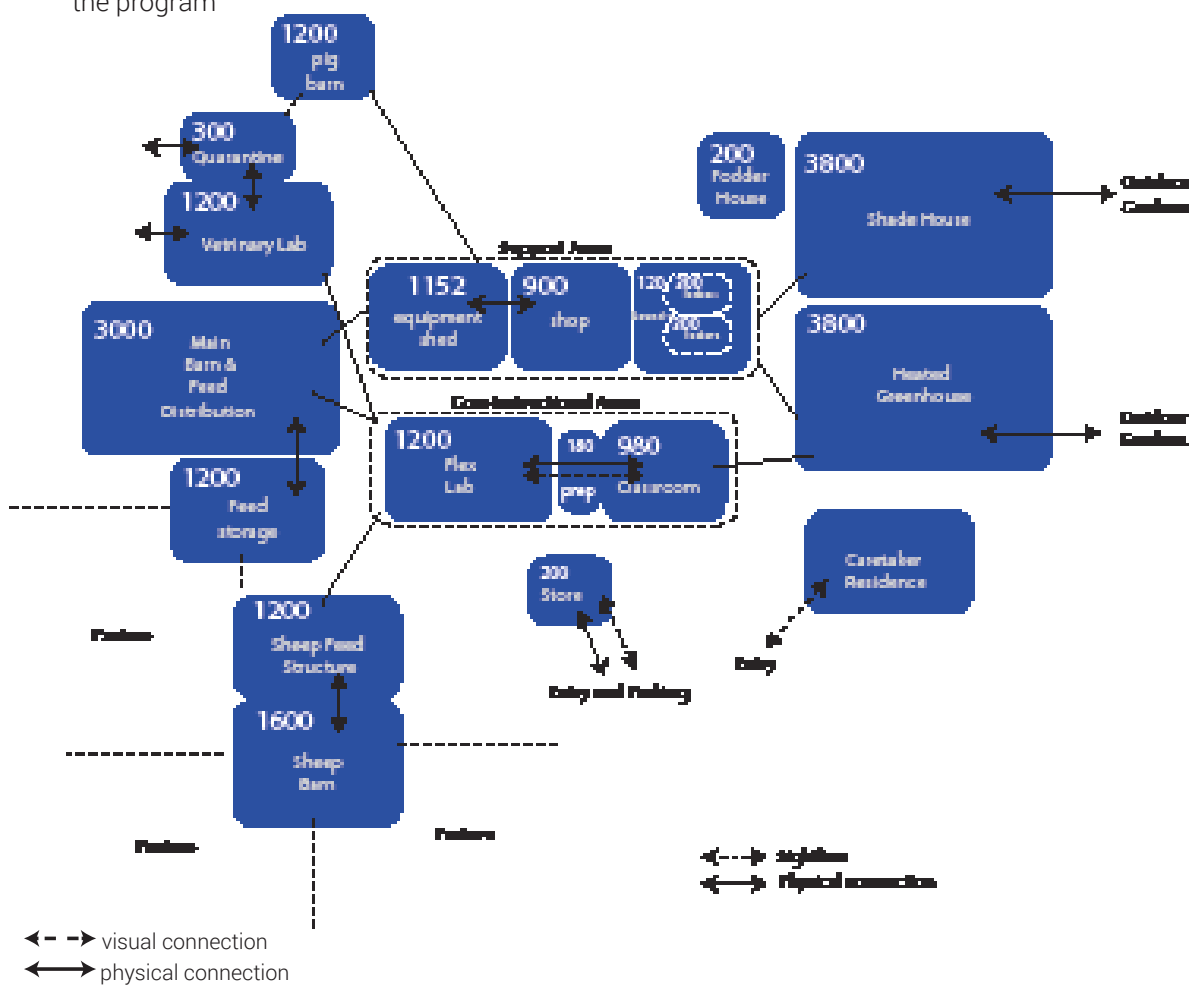
Agriculture	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
AG1.1	Classroom	Classroom	32	980	1	980	
AG1.2	Lab	Flex Lab	32	1,200	1	1,200	
AG1.3	Office and Prep	Office		180	1	180	
AG1.4	Main Barn	Flex Lab	32	3,000	1	3,000	
AG1.5	Feed Distribution	Support					
AG1.6	Feed Storage	Support		1,200	1	1,200	30 ton hay, 4-6 ton grain (bags and pallets)
AG1.7	Veterinary Lab	High Intensity Lab	32	1,200	1	1,200	
AG1.8	Sheep Barn	Flex Lab	32	1,600	1	1,600	
AG1.9	Sheep Feed Structure	Support		1,200	1	1,200	
AG1.10	Cattle feed Structure	Support					Possibly Combine with Sheep Feed
AG1.11	Shade Greenhouse	Support		3,800	1	3,800	
AG1.12	Heated Greenhouse	Support		3,800	1	3,800	Includes headhouse - Instructional Space
AG1.13	Fodder Greenhouse	Support		200	1	200	
AG1.14	Shop	Support		900	1	900	Includes air compressor
AG1.15	Caretaker	Support		1,200	1	1,200	separation from animals spaces - visibility to entry to site
AG1.16	Store	Support		200	1	200	
AG1.17	Lockers	Support		300	2	600	
AG1.18	Pig Barn	Flex Lab		1,200	1	1,200	Needs to be separated from other animal areas and pastures, note industry standards for animal structures
AG1.19	Laundry	Support		120	1	120	
AG1.20	Equipment Shed	Support		1,152	1	-	24'x48' three side
AG1.21	Quarantine Barn			300	1	300	
Total Net SF						22,880	
	Mechanical	4%				915	
	Walls / Partitions	9%				2,059	
	Structure	2%				458	
	Circulation / Restrooms	10%				2,288	
Total Estimated Gross SF						28,600	

PROGRAMMATIC C



OPPORTUNITIES & CHALLENGES

- there is a desire to provide students with hands-on experience in the agricultural industry so they can sell meats and produce generated by the program, further exposing students to business and community engagement aspects of the program



Programs



Photo by: NCSD

ARCHITECTURE & DESIGN

Courses in the Architecture & Design program offer foundations to design and engineering, including digital and physical production of models and drawings, industry standard software exposure, and professional mentorship leading to articulation and presentation of contributions to the built environment. This program works closely alongside Digital Design and leans on technology and equipment reserved for construction trades. College credit is available in this program.

Direct job applicability is noted for the following careers: Architects • Civil, Industrial & Mechanical Engineers • Construction Managers • Cartographers • Technical Writers • Builders

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

2,400 GSF

CHARACTERISTICS

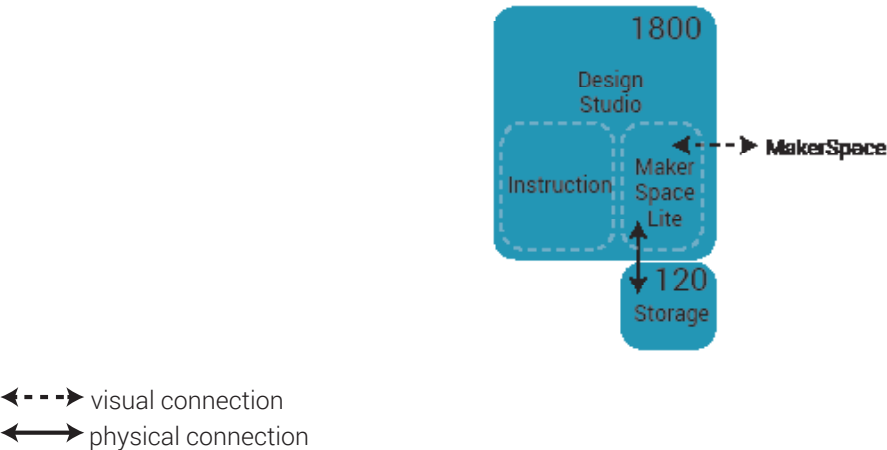
- formal or informal
- flexible furnishings
- tack-able surfaces

SPACE & EQUIPMENT NEEDS

- community accessibility / after hours access
- flexible access to electrical power, possibly via cord reels from ceiling or floor boxes
- movable storage in lieu of built-in cabinetry
- mixture of standing-height and sitting height work settings
- maker space should be easily accessible / adjacent
- access to digital displays in common areas for display of student work
- acoustic paneling / reconfigurable partitions for individual vs. group review
- "some design takes place on tablets" via tablet bank / cart
- lighting in the space is zoned for different type of activities / work styles
- light tables
- tackable surfaces
- mobile whiteboards • 3D printers
- desktop CNC
- programmable / interactive projectors
- desktop computers
- 3D printers, a desktop CNC, laser cutter, vinyl cutter
- large format printer / plotter

Programs

SPACE PLAN: ADJACENCY DIAGRAM



Tours revealed an appreciation for certain computer lab layouts as observed at Sandy High School shown above.

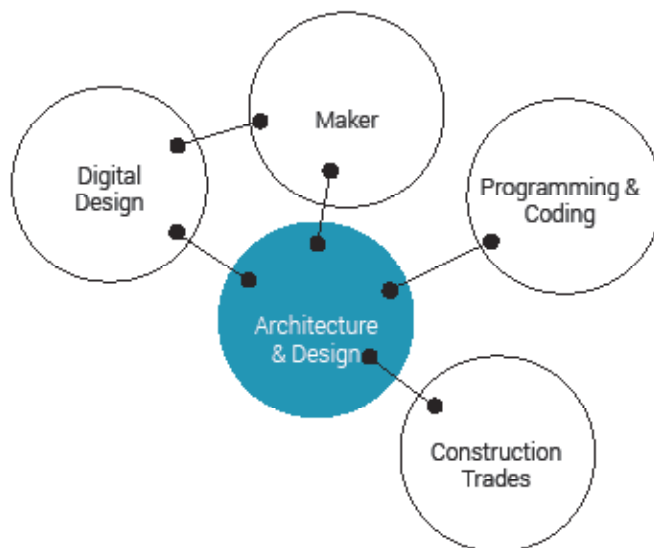


Architecture & Design students as provided by NCSD shown above.

PROGRAM BREAKDOWN:

Architecture and Design	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
AD1.1	Design Studio	High Intensity Lab					
AD1.2	- Direct Instructional Area		32	800	1	800	
AD1.3	- Maker Space Lite			400	1	400	(5) 3D Printers , (2) Desktop CNC, 24x12 Laser cutter, Vinyl Cutter, (2) Plotters
AD1.4	- Computer			600	1	600	
AD1.5	Storage	Support		120	1	120	
Total Net SF						1,920	
Mechanical						77	
Walls / Partitions						173	
Structure						38	
Circulation / Restrooms						192	
Total Estimated Gross SF						2,400	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH

- workshops revealed desire for emphasis on design + build opportunities
- in order to better support design + build potentials, co-locating Architecture & Design with Manufacturing & Engineering and the Construction Trades programs could facilitate deeper connections to real world applications



Tours revealed appreciation of model making as observed at Cascadia Technical Academy shown above.

Programs



Photo by: NCSD

AUTOMOTIVE SERVICE TECHNOLOGY

Courses in this program cover aspects of automobile service and technology, including fundamental theories and systems of the internal combustion engine: electrical, fuel and ignition; brakes, steering, suspension, electrical systems and engine performance as well as preventive maintenance. Internship opportunities are available to advanced students interested in building employment or career foundations. College credit is available in this program.

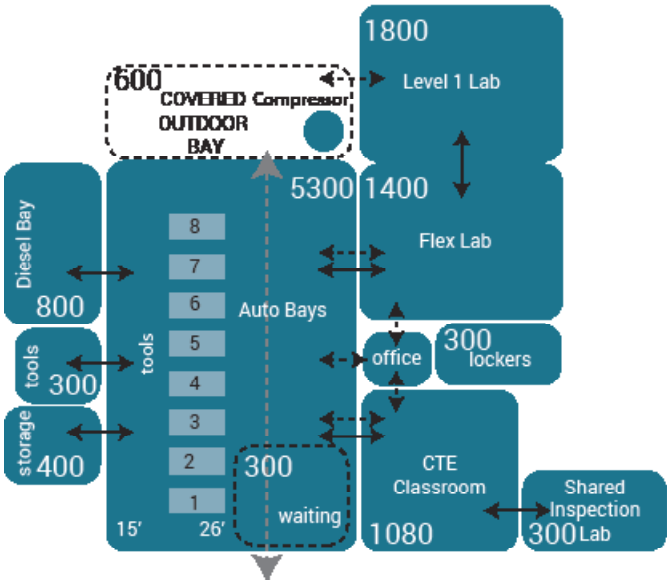
Direct job applicability is noted for the following careers: Automotive Service Technicians & Mechanics • Automotive Body Repairers • Bus & Truck Mechanics • Diesel Engine Specialists

USER GROUPS	SPACE SPECIFICS & EQUIPMENT NEEDS
Students Staff Community Members	<ul style="list-style-type: none"> • clear sightlines throughout the entirety of shop area and clear access control of shop areas, i.e. primary access to shop is through adjacent classrooms • provide glass / transparency into shop area from adjacent instructional spaces for supervision • provide centralized shop emergency "shut-off" • zoned lighting controls, and maximize daylighting throughout shop areas, and high light-reflecting surfaces (floor, walls, ceilings), and task lighting at focused work areas • epoxy coated floors are preferred for cleanability and light reflectance • acoustic control within shop areas as well as separation from supporting teaching spaces • provide "storefront" / lobby for community engagement • secured outdoor work area directly accessible from shop area • high efficiency racking in storage areas and lockers / personal storage • access to water and floor drains throughout shop areas • flexible access to electrical power, possibly via cord reels from ceiling or floor boxes • waste oil repository (5x5 plastic tub) • hybrid / electrical car support + charging stations & (7) lifts
PROSPECTIVE SIZE	
14,800 GSF	
CHARACTERISTICS	
<ul style="list-style-type: none"> • formal or informal • flexible furnishings • community access • varying storage 	

Programs

SPACE PLAN: ADJACENCY DIAGRAM

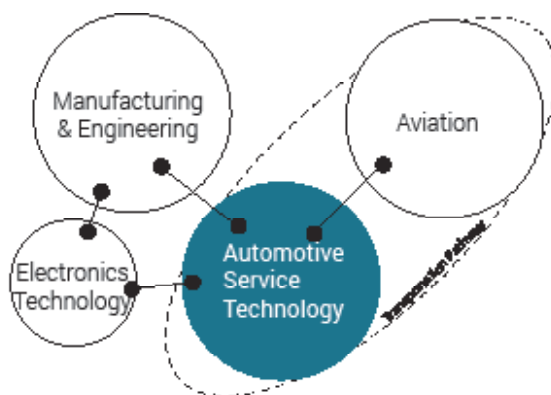
↔ visual connection
 ↔ physical connection



PROGRAM BREAKDOWN:

Automotive Space Use		Space Type	Capacity	NSF	QTY	Total NSF	Comment
AU1.1	Auto Bays	Specialized Learning	36	5,000	1	5,000	includes tools areas
AU1.2	Diesel Bay	High Intensity Lab	36	800	1	800	
AU1.3	CTE Classroom	CTE Classroom	36	1,080	1	1,080	
AU1.4	Level 1 Lab	High Intensity Lab	36	1,800	1	1,800	Provide access to car, Tire rotation / brakes support
AU1.5	Flex Lab	Flex Lab	36	1,400	1	1,400	
AU1.6	Inspection Lab	Support		300	1	300	Shared with Aviation / Manufacturing
AU1.7	Storage - Tools	Support		300	1	300	
AU1.8	Storage - General	Support		400	1	400	
AU1.9	Locker Room	Support		300	1	300	
AU1.10	Customer Waiting Area	Support		300	1	300	
AU1.11	Office	Medium Office	1	1	1	160	Team Office 2-3 Staff
AU1.12	Outdoor Bay	Outdoor		600	1		Covered with water, power, compressed air
Total Net SF						11,840	
Mechanical						474	4%
Walls / Partitions						1,066	9%
Structure						237	2%
Circulation / Restrooms						1,184	10%
Total Estimated Gross SF						14,800	

PROGRAMMATIC CONNECTIONS:

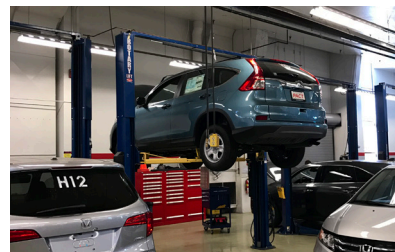


OPPORTUNITIES & GROWTH

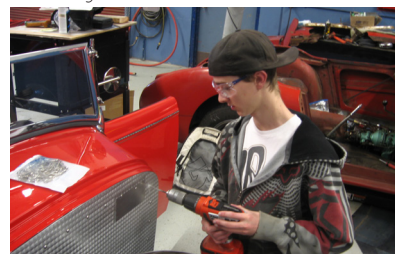
- potential for study on both diesel and electric automobile systems equates to desired adjacency with Electronics Technology and dedicated design studios
- a space enabling the design and fabrication of even partial systems would emphasize the benefits of strategic shared resources with Electronic Technology and Manufacturing & Engineering
- with much potential for spaces active with fabrication and automobile construction techniques, displaying the program at work is ideal – fabrication studios should be close to the perimeter with high visibility to those passing by



Lift allowance and number of vehicles allowed as observed at Sandy High School.



Lift allowance and number of vehicles as observed at Clark College.



AST student provided by NCSD, shown above.

Programs



*AVIATION



Photo at: Cascadia Technical Academy

*AVIATION

Aviation is not currently available in the NCSD CTE curriculum. Details regarding college credit are forthcoming.

Job applicability is noted for the following careers: Commercial and Private Pilots • Conservationists • Aerospace Engineers • Manufacturing and Assembly Technicians • Aviation Mechanics • Flight Technology

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

5,775 GSF (lite)
12,875 GSF (full)

CHARACTERISTICS

- fluid interchange between simulation and reality testing
- materials storage
- security

SPACE SPECIFICS & EQUIPMENT NEEDS

- clear sightlines throughout the entirety of shop area, reduce visual obstructions
- clear access control of shop areas, i.e. primary access to shop is through adjacent classrooms
- provide glass / transparency into shop area from adjacent instructional spaces for supervision
- provide centralized shop emergency “shut-off”
- centralized zoned lighting controls
- maximize daylighting throughout shop areas
- high light reflecting surfaces (floor, walls, ceilings)
- epoxy coated floors are preferred for cleanability and light reflectance
- provide task lighting at focused work areas
- acoustic control within shop areas as well as separation from associated teaching spaces
- partially covered / secured / lockable outdoor work area directly accessible from shop area
- high efficiency racking in storage areas
- flexible access to electrical power, possibly via cord reels from ceiling or floor boxes
- special consideration of access to wifi in the welding areas, currently magnetic field of welding machines limits wifi access

Programs

- Aviation schemes, 'Lite' and 'Full,' are shown as potential options for program delivery

PROGRAM BREAKDOWN:



Aviation 'Lite' Program



+



Aviation 'Full' Program

Aviation (Lite)	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
AVL1.1	Flex Lab	Flex Lab	32	1,400	1	1,400	Flexible Aviation Classroom - Will not accommodate full size plane
AVL1.2	CTE Classroom	CTE Classroom	32	1,080	1	1,080	
AVL1.3	Welding	Support		200	1	200	
AVL1.4	Shop Area	Support		200	1	200	
AVL1.5	Compressor	Support		150	1	150	
AVL1.6	Storage - General	Support		200	1	400	
AVL1.7	Storage - Parts	Support		200	1	400	
AVL1.8	Tools Crib	Support		300	1	300	
AVL1.9	Office	Small Office		120	1	120	
AVL1.10	Lockers	Support		300	1	300	

Total Net SF 4,550

Mechanical 4% 182

Walls / Partitions 9% 410

Structure 2% 91

Circulation / Restrooms 10% 542

Total Estimated Gross SF 5,775

Aviation (Full)	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
AV1.11	Flex Lab	Specialized Learning	32	5,000	1	5,000	assume 60'x80" open bay area
AV1.12	Flex Lab	Flex Lab	32	1,400	1	1,400	
AV1.13	Welding	Support		300	1	300	
AV1.14	Paint	Support		400	1	400	
AV1.15	Composites	Support		400	1	400	
AV1.16	Inspection Lab	Support		300	1	300	Shared with/ manufacturing
AV1.17	Battery	Support		100	1	100	
AV1.18	Shop Area	Support		400	1	400	
AV1.19	Sheet Metal	High Intensity Lab	32	1,200	1	1,200	Could be shared with Manufacturing
AV1.20	Storage - General	Support		400	1	400	
AV1.21	Storage - Parts	Support		400	1	400	

Total Net SF 10,300

Mechanical 4% 412

Walls / Partitions 9% 927

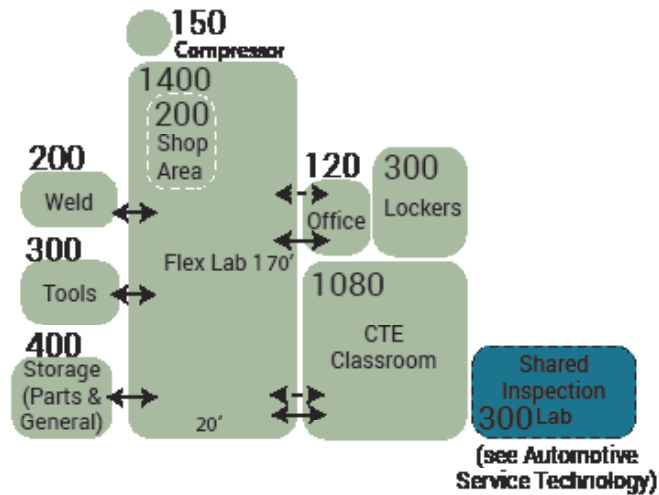
Structure 2% 206

Circulation / Restrooms 10% 1,030

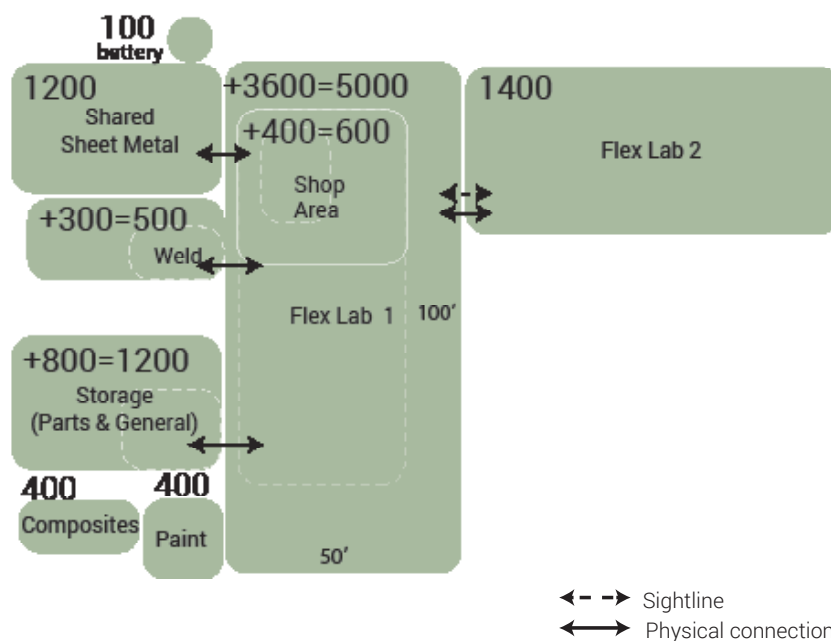
Total Estimated Gross SF 12,875

*AVIATION

SPACE PLAN: ADJACENCY DIAGRAM: AVIATION 'LITE'



SPACE PLAN: ADJACENCY DIAGRAM: AVIATION 'FULL'

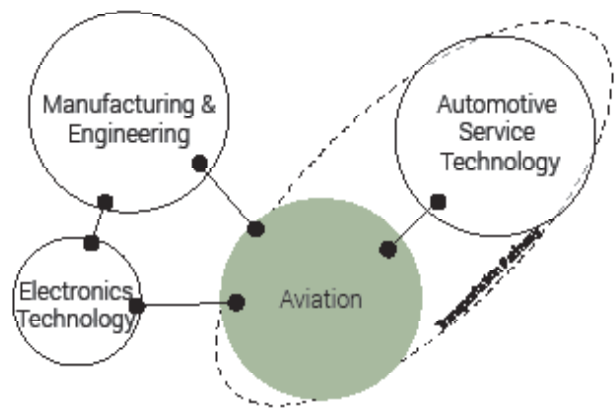


*AVIATION



Photo at: Sno-Isle TECH

PROGRAMMATIC CONNECTIONS:



OPPOR

- intends to support aircraft technologies fabrication, manufacturing, and flight simulations
- possible related careers include aircraft maintenance and assembly, for example



Observed at Sno-Isle TECH.



Observed at Sno-Isle TECH.



Observed at Cascadia Technical Academy.

*AVIATION

Programs



Photo by: NCSD

BROADCASTING & SOCIAL MEDIA

Courses in this program offer exposure to varying broadcasting and social media platforms, including radio, television, sports entertainment, and film. This program emphasizes production strategies, content generation, and editing. College credit and internships are available in this program.

Direct job applicability is noted for the following careers: • Producers & Directors • Public Relations Specialists • Technical Writers • Multimedia Artists & Animators

USER GROUPS

Students
Staff
Community Members

SPACE SPECIFICS & EQUIPMENT NEEDS

PROSPECTIVE SIZE

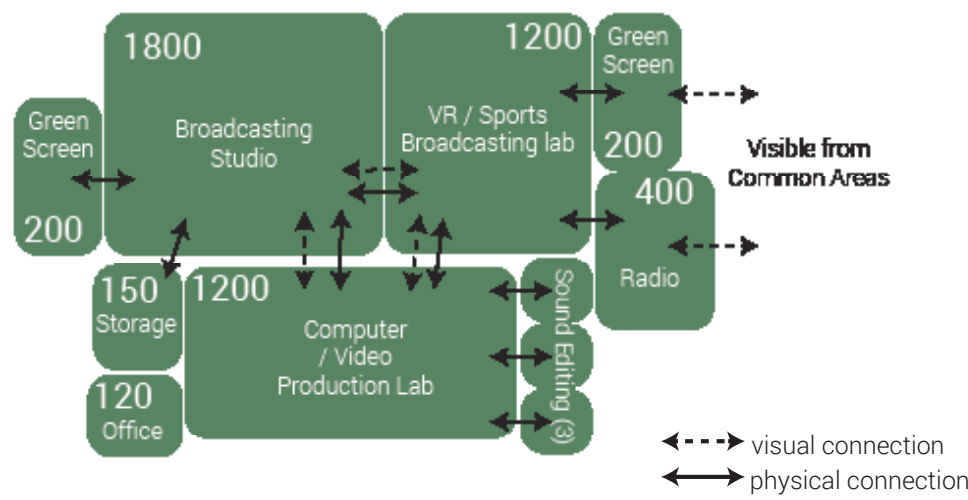
6,775 GSF

CHARACTERISTICS

- provide prominent public visibility into Radio studio / Broadcasting lab
- we are “looking at classrooms as businesses” – quote from focus group
- carefully consider cooling system in Broadcast spaces due to high equipment heat load
- acoustic separation from other spaces due to sensitivity of sound interruption
- ability to host an audience of 75-100 people in addition to production staff
- provide flexible/adjustable, and exposed lighting with all broadcast areas
- provide flexible access to electrical power, possibly via cord reels from ceiling or floor boxes
- virtual reality / augmented reality + headsets
- green screen
- desktop editing stations
- virtual reality operator floor
- engages one on one
- high action space visible to internal and external community
- agile space

Programs

SPACE PLAN: ADJACENCY DIAGRAM



NCSD Broadcasting & Social Media students.

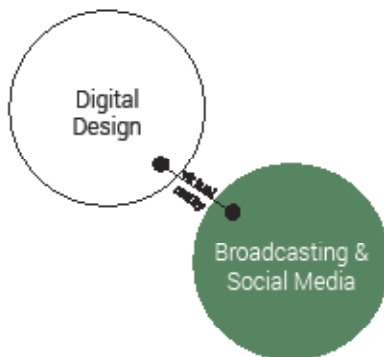


NCSD Broadcasting & Social Media students.

PROGRAM BREAKDOWN:

Broadcasting & Social Media Space Use		Space Type	Capacity	NSF	QTY	Total NSF	Comment
BR1.1	Broadcasting Studio	High Intensity Lab	1,800	1	1,800		
BR1.2	Storage	Support		150	1	150	
BR1.3	Green Screen	Support		200	2	400	
BR1.4	VR / Sports Broadcasting Lab	Flex Lab	1,200	1	1,200		
BR1.5	Computer / Animation Lab	Flex Lab	1,200	1	1,200		
BR1.6	Radio Station	Support		400	1	400	
BR1.7	Sound Editing Booth	Support		50	3	150	
BR1.8	Office	Support		120	1	120	
Total Net SF						5,420	
Mechanical			4%			217	
Walls / Partitions			9%			488	
Structure			2%			108	
Circulation / Restrooms			10%			542	
Total Estimated Gross SF						6,755	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH

- both virtual reality and augmented reality (VR & AR) technologies will play a vital role in this program
- a connection to Digital Design could aid in graphic production for viewers, or promotional material for listeners
- as VR & AR use is also anticipated for both Broadcasting & Social Media and Digital Design, adjacency to these programs would yield dual use



NCSD Broadcasting & Social Media students.

Programs



Photo by: NCSD

BUSINESS MANAGEMENT & SPORTS MARKETING

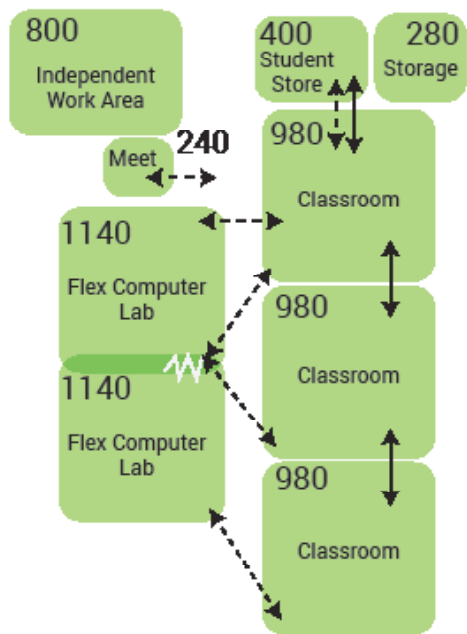
Courses in this program offer opportunities to engage in business simulation and planning, record keeping and analysis, situational applicability, retail strategy and communication, entrepreneur strategy, and marketing. College credit is available in this program.

Direct job applicability is noted for the following careers: Marketing & Sales Managers • Accountants and Auditors • Advertising Sales Agents • Sales Representatives • Bookkeepers • Market Research Analyst • Sports Advertising Representative

USER GROUPS	SPACE SPECIFICS & EQUIPMENT NEEDS
Students Staff Community Members	<ul style="list-style-type: none">• transparency for supervision• walk-up student store preferred over walk-in type due to theft concerns• incubator / entrepreneurial spaces for independent and small group collaboration• multi-purpose to support 36 person meetings (teams of 6-8)• professional meeting space for industry partner collaboration• provide flexible storage in lieu of built in cabinetry• furniture should be easily re-configurable• computer labs / desktop computers – need to support 108 students simultaneously• video / voice communication• power and data located for maximum flexibility• zoned lighting
PROSPECTIVE SIZE	
8,075 SF	
CHARACTERISTICS	
<ul style="list-style-type: none">• lab to presentation• student store centric• aimed at providing direct customer interaction	

Programs

SPACE PLAN: ADJACENCY DIAGRAM



↔ visual connection
 ↔ physical connection



Benedictine University School of Business

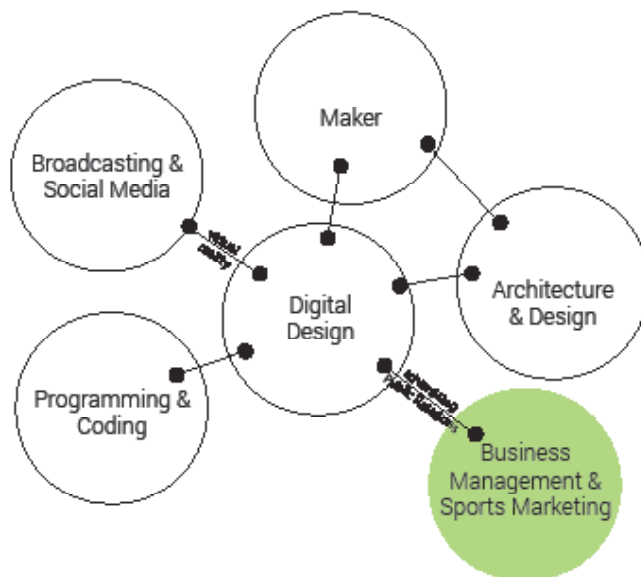


Lawrence Public School

PROGRAM BREAKDOWN:

Business Management & Sports Marketing	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
BUS1.1	Classroom	Classroom	32	980	3	2,940	
BUS1.2	Flex Computer Lab	Flex Lab	35	1,140	2	2,280	combines to create low intensity lab accommodating up to 120 users @ 15 SF/ user
BUS1.3	Independent Work Area	Classroom	8	800	1	800	
BUS1.4	Conference Room	Meeting Space	8-10	240	1	240	
BUS1.5	Student Store	Support		400	1	400	
BUS1.6	Storage	Support		280	1	280	
Total Net SF						6,940	
Mechanical						258	
Walls / Partitions						581	
Structure						129	
Circulation / Restrooms						646	
Total Estimated Gross SF						8,554	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES

- the student store is essential to producing real world applicability of business transactions
- the store acts as a strong connection back to the community
- this program benefits from teaming with Digital Design and Broadcasting & Social Media



NCSD Business Management & Sports Marketing students.

Programs



Photo by: NCSD

*CONSTRUCTION TRADES

Construction Trades is a program not currently available in the NCSD CTE curriculum. Shared resources are anticipated with Electronics Technology, Aviation, Architecture & Design, and Manufacturing & Engineering. Details regarding college credit are forthcoming.

Job applicability is noted for the following careers: •Carpenters •Builders •Contractors •Construction Management Professionals •Mechanical Professionals •Plumbers •Welders •Electricians

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

10,475 GSF (lite)
6,000 GSF (full)

CHARACTERISTICS

- enclosed and unenclosed
- exposed systems
- flexible storage
- drivable areas

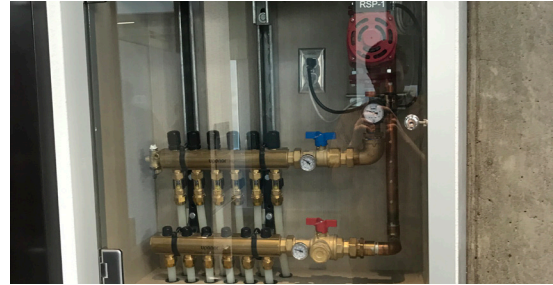
SPACE SPECIFICS & EQUIPMENT NEEDS

- clear sightlines throughout the entirety of shop area, and clear access control of shop areas, i.e. primary access to shop is through adjacent classrooms
- provide glass / transparency into shop area from adjacent instructional spaces for supervision
- provide centralized shop emergency “shut-off”
- provide centralized zoned lighting controls, maximize daylighting throughout shop areas, high light-reflecting surfaces (floor, walls, ceilings), and task lighting at focused work areas
- epoxy coated floors are preferred for cleanability and light reflectance, and separate “dirty” and “clean” areas to greatest extent possible due to dust’s damaging effect on technology
- acoustic control within shop areas as well as separation from associated teaching spaces
- partially covered / secured / lockable outdoor work area directly accessible from shop area, and high efficiency racking in storage areas
- flexible access to electrical power, possibly via cord reels from ceiling or floor boxes
- provide flexible materials handling via overhead hoists and forklift throughout
- currently, magnetic field of welding machines limits access to wifi, special consideration needed

Programs



Tours revealed appreciation of working construction projects as observed at the Northwest College of Construction.



Exposed building systems noted as desirable as provided at Clark College shown above.

PROGRAM BREAKDOWN:

Construction Trades LITE	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
CT1.1	Construction Lab	Specialized Learning	32	4,200	1	4,200	
CT1.2	Tool Room	Support		200	1	200	
CT1.3	Material Storage	Support		400	1	400	
CT1.4	Construction Yard	Outdoor					5,000SF Outdoors
CT1.5	Design Lab	Flex Lab	32	1,400	1	1,400	
CT1.6	CTE Classroom	CTE Classroom	32	1,080	1	1,080	
CT1.7	Student Property Storage	Support		200	3	600	
CT1.8	Lockers	Support			2		Located in Lab Areas
CT1.9	Changing Room	Support		500	1	500	

Total Net SF

8,380

Mechanical

4%

335

Walls / Partitions

9%

754

Structure

2%

168

Circulation / Restrooms

10%

838

Total Estimated Gross SF

10,475

Construction Trades FULL	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
CT1.10	Applied Environmental Science Lab - HVAC	Specialized Learning	32	4200	1	4,200	Optional Program
CT1.11	Tool Room	Support		200	1	200	Optional Program
CT1.12	Material Storage	Support		400	1	400	Optional Program

Total Net SF

4,800

Mechanical

4%

192

Walls / Partitions

9%

432

Structure

2%

96

Circulation / Restrooms

10%

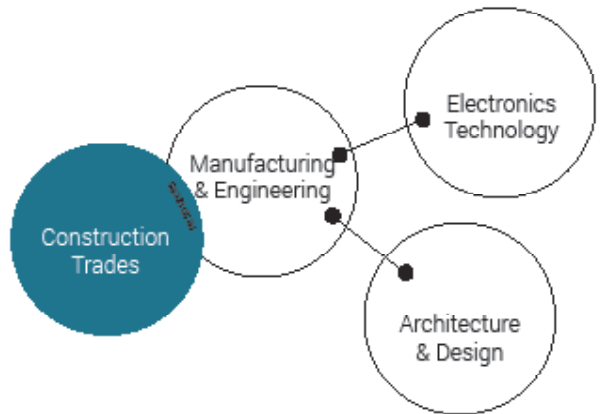
480

Total Estimated Gross SF

6,000

*CONSTRUCTION TRADES

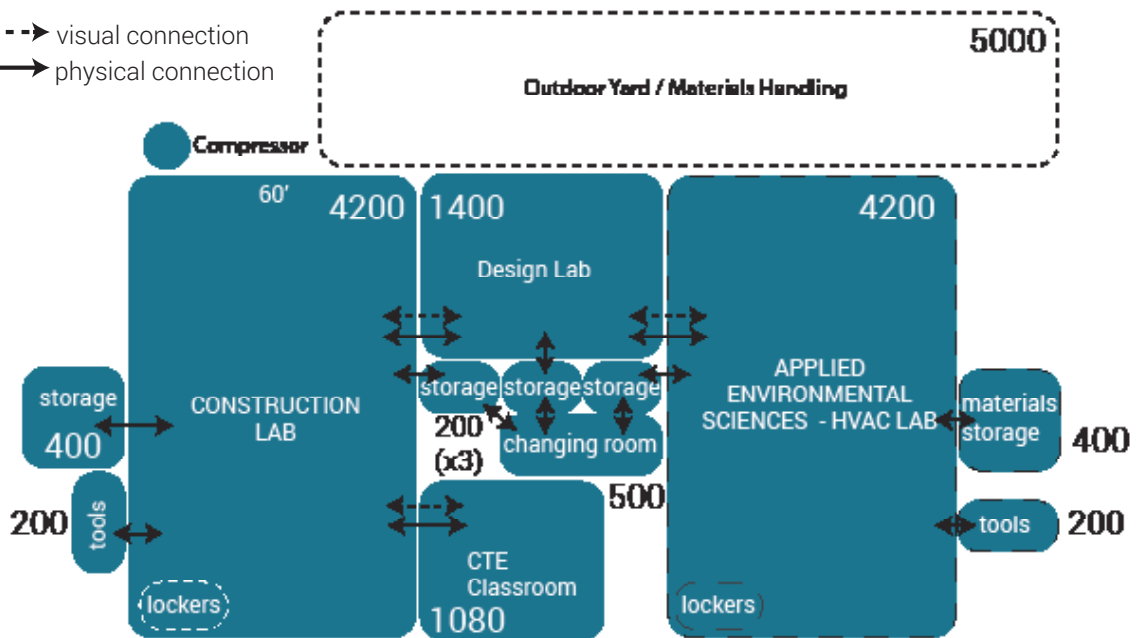
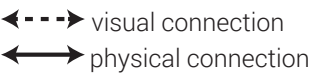
PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES:

- key adjacency lies with Manufacturing & Engineering, and direct access to 3D printing is key
- real world application and design-build opportunities are key for direct career applicability

SPACE PLAN: ADJACENCY DIAGRAM



Programs



COSMETOLOGY

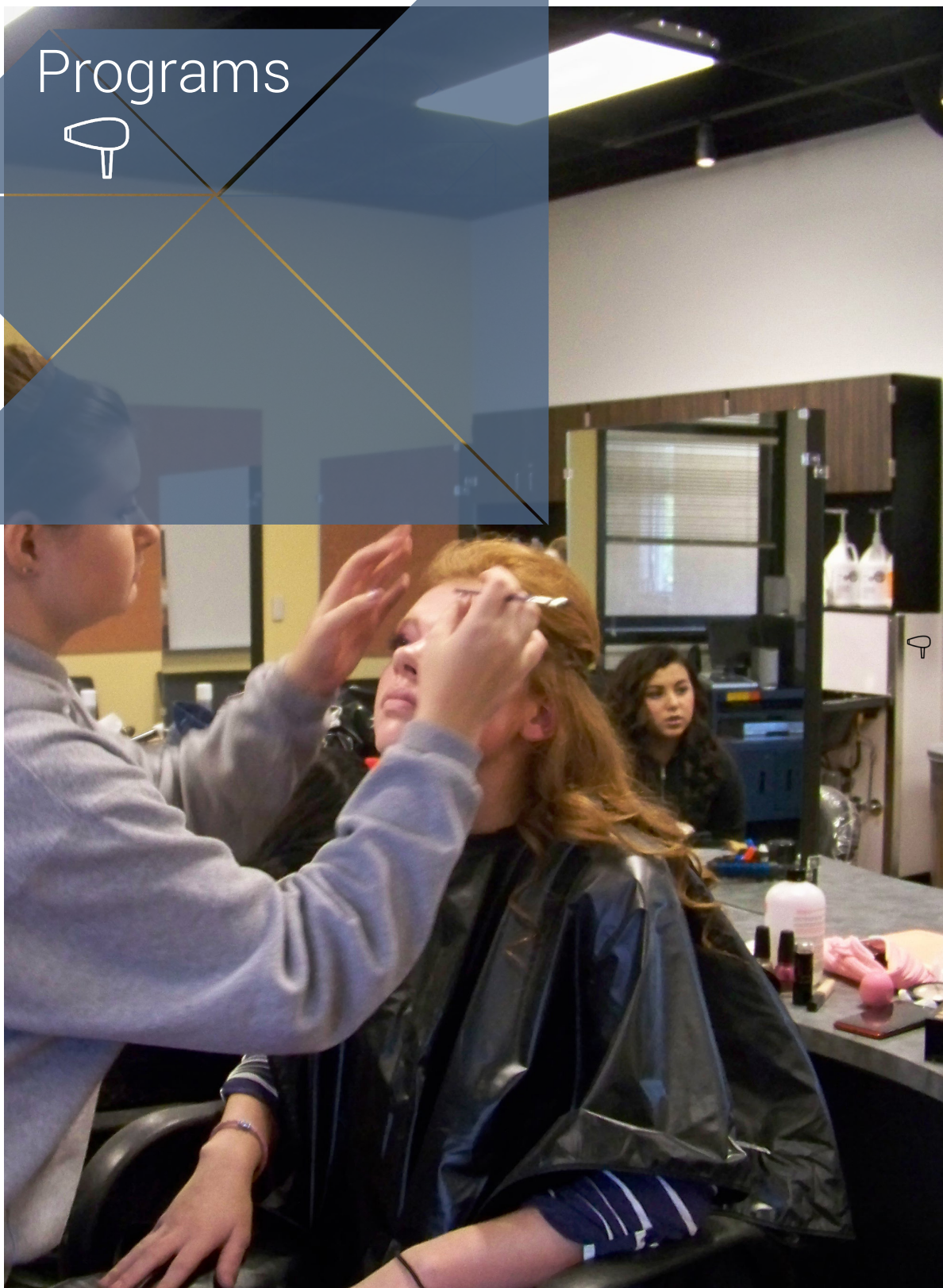


Photo by: NCSD

COSMETOLOGY

Courses in this program offer instruction in hair design (haircutting, styling, coloring and highlighting), esthetics (skin care and makeup) and nail technology (manicures and pedicures). Hours worked in the salon count toward licensure. Students directly engage with design concepts, technologies, clientele establishment and management, product education, salon management, and direct exposure to industry professionals. College credit is available in this program.

Direct job applicability is noted for the following careers: High Demand: High Skills: • Hairstylists • Hairdressers • Cosmetologists • Manicurists • Pedicurists • Skin care Specialists • Barbers

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

7,988 GSF

CHARACTERISTICS

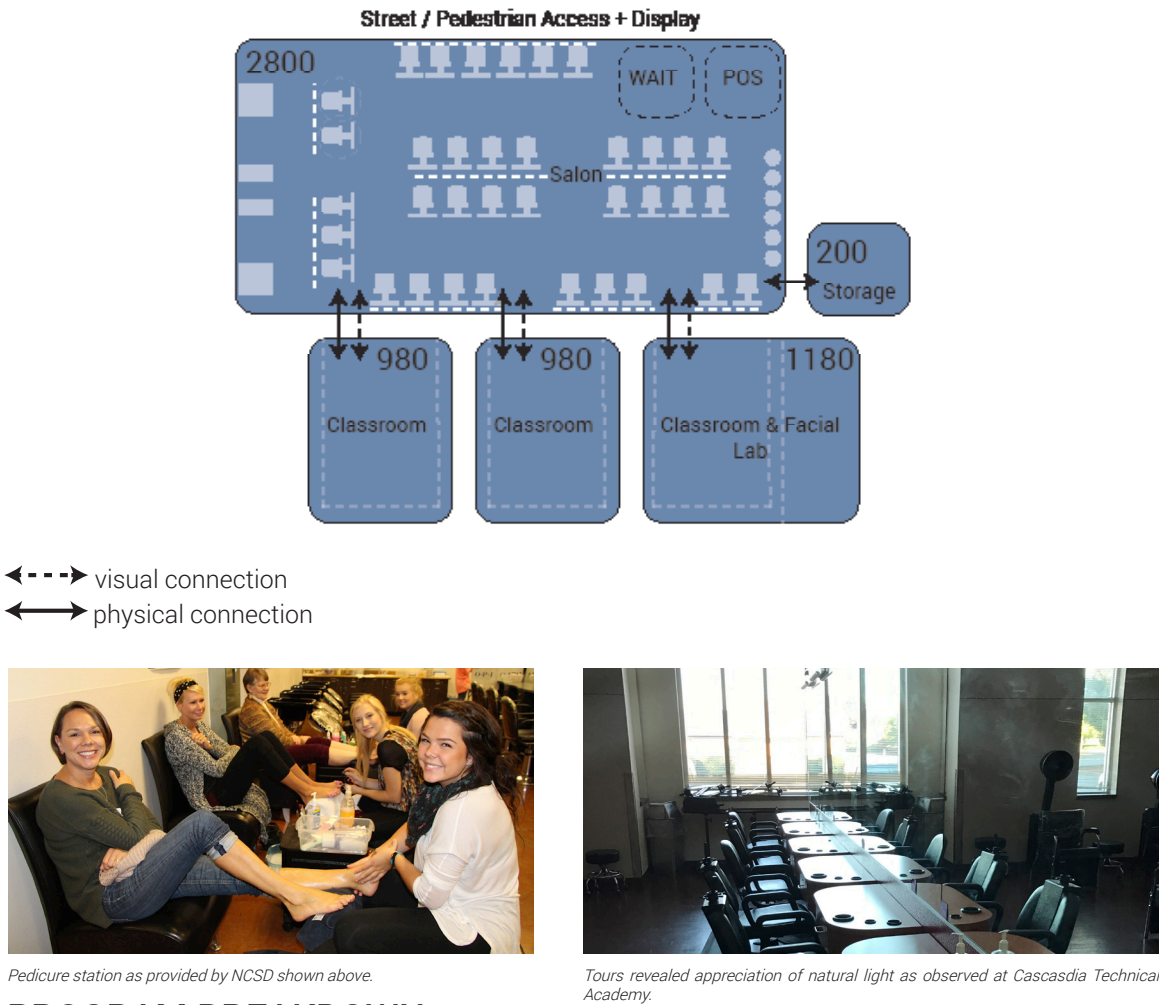
- engages one on one
- supports clientele building
- reflective space

SPACE SPECIFICS & EQUIPMENT NEEDS

- provide access to natural daylight and/or full spectrum lighting for accurate color mixing
- provide a 5'-0" safety radius typical at stations
- provide adequate ventilation and exhaust throughout, particularly at nail salon.
- provide counter for mannequin support
- provide areas for product display (2D and 3D)
- (2) washers and (2) dryers
- (7) shampoo bowls and back bar
- mannequins
- sanitation unit for tools
- manicure and pedicure stations
- styling tools

Programs

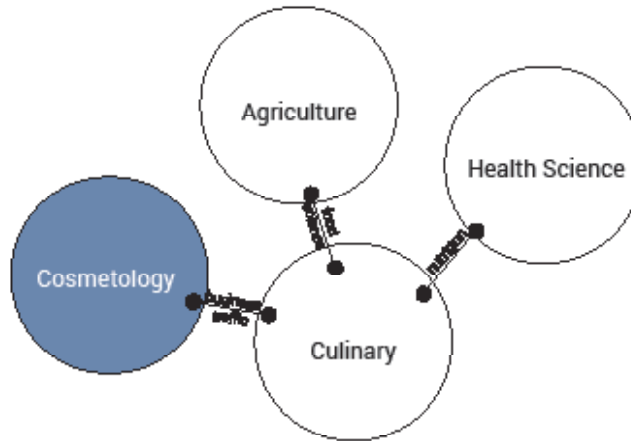
SPACE PLAN: ADJACENCY DIAGRAM



PROGRAM BREAKDOWN:

Cosmetology Space Use		Space Type	Capacity	NSF	QTY	Total NSF	Comment
CS1.1	Salon	High Intensity Lab	36	2,800	1	2,800	36 Chairs
CS1.2	Point of Sale / waiting area	Support		250	1	250	
CS1.3	Salon Storage	Support		200	1	200	
CS1.4	Classroom	Classroom	36	980	3	3,140	+ 200 SF for facial lab @ 1 classroom
Total Net SF						6,390	
Mechanical		4%				256	
Walls / Partitions		9%				575	
Structure		2%				128	
Circulation / Restrooms		10%				639	
Total Estimated Gross SF						7,988	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH:

- projected job growth notes barbering as a trending profession, this program should plan to include this career in future courses
- as Cosmetology serves a high traffic clientele, other programs, such as the Culinary Arts cafe or restaurant can benefit from being located adjacent to these high traffic programs
- proper ventilation of all Cosmetology spaces is critical
- air conditioning is also critical as salon is a year round service area with active clientele



Station spatial alignment as observed at NCSD shown above.

Programs



CULINARY



Photo by: NCSD

CULINARY

Courses in this program offer opportunities to learn food handling, sanitation, equipment, means and methods, menu planning, management techniques, communication, productivity analysis, and catering basics. College credit is available in this program.

Direct job applicability is noted for the following careers: Food Service Managers • Purchasing Managers • Food Science Technicians • Chefs & Head Cooks • Meeting, Convention, Event Planners

USER GROUPS

Students
Staff
Community members

PROSPECTIVE SIZE

13,238 GSF

CHARACTERISTICS

- agile
- flexible station positioning and movement
- glazed transitions

SPACE SPECIFICS & EQUIPMENT NEEDS

- allow for transparency from common areas into kitchen and work areas to celebrate the work that is happening in these more technical space
- dining area should allow for reconfiguration and customization to changing menus and themes
- locate the dining area in a high traffic location to capture as many patrons as possible Consider locating programs with high traffic next to the dining area for increased visibility
- provide clear sightlines to all cooking stations for appropriate supervision
- minimize visual obstructions in the kitchen areas as much as possible
- provide flexible portable induction cooktops in the Flex Kitchen
- provide flexible access to electrical power, possibly via cord reels from ceiling or floor boxes
- oil repository
- baking / pastries
- prep tables on casters
- stove, oven, refrigerator (per stations)
- induction burners
- grease trap
- dough sheeter

Programs

OPPORTUNITIES & GROWTH:

- key opportunities involve hosting large banquets or dining events, for which a banquet space, full restaurant would be useful to develop real world experiences or perhaps build a clientele
- positioning next to programs generating clientele could help activate programs as they would benefit from the high traffic / visit frequency (i.e. the Cosmetology program)
- proper ventilation of all culinary spaces is critical



Tours revealed desire for full demonstration kitchen, as observed at Sno-Isle TECH shown above.



Tours revealed desire for a dining / banquet area, as observed at Sno-Isle TECH shown above.

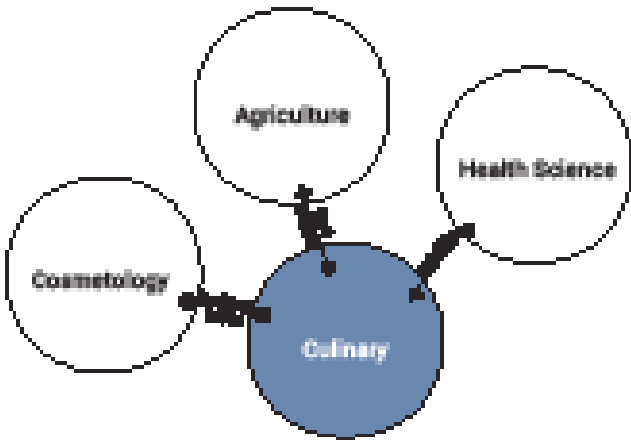


Tours revealed desire for a dining / banquet area. University Towers Cafe shown above.

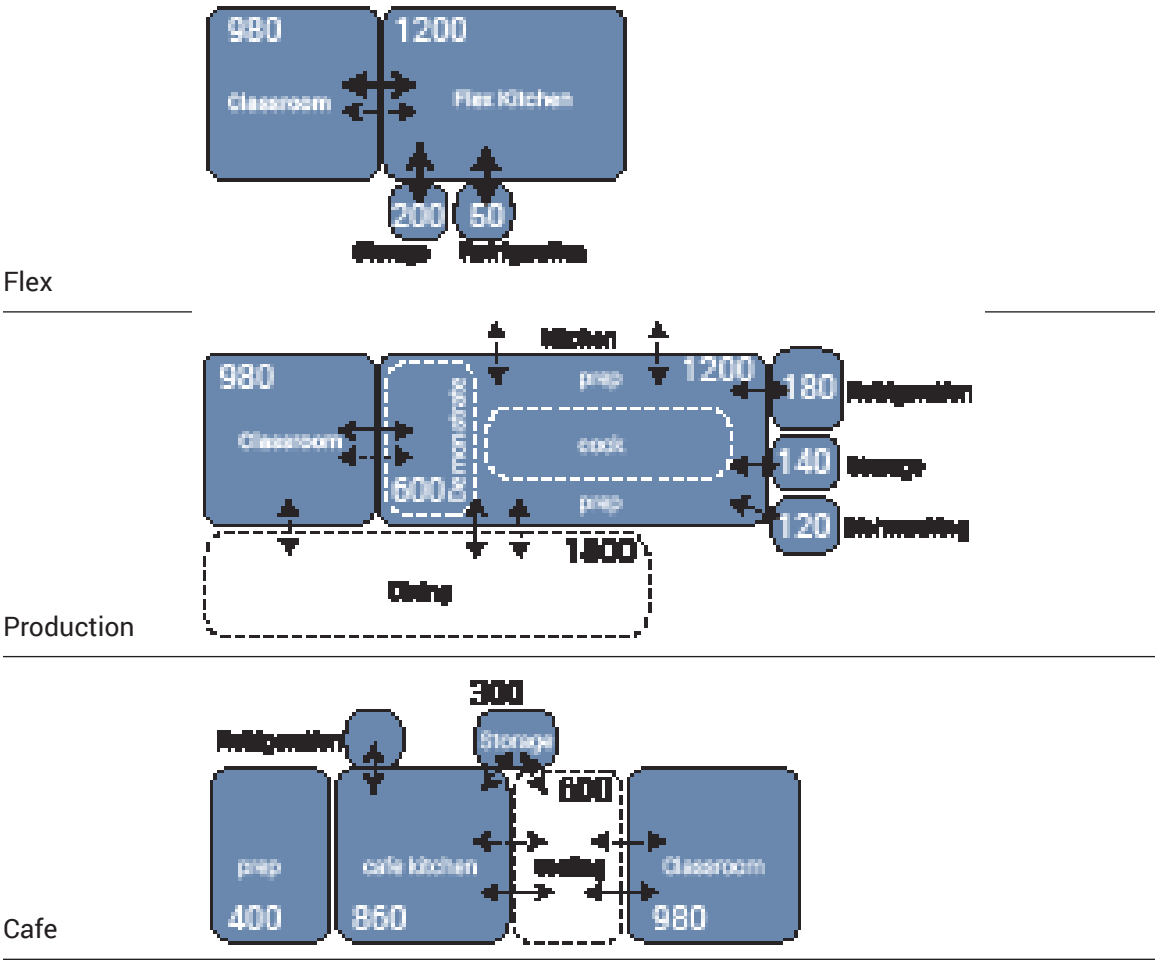
PROGRAM BREAKDOWN:

Culinary Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
CU1.0 Flex Kitchen						
CU1.1 Flex Kitchen	Flex Lab	32	1,200	1	1,200	Includes Demonstration Areas
CU1.2 Classroom	Classroom	32	980	1	980	
CU1.3 Storage	Support		200	1	200	
CU1.4 Refrigeration	Support		50	1	50	
CU2.0 Production Kitchen						
CU2.1 Demonstration Area	Support		600	1	600	
CU2.2 Commercial Kitchen	High Intensity Lab	32	1,200	1	1,200	6 individual cooking stations
CU2.3 Dining / Restaurant	Flex Lab		1,800	1	1,800	seating for 60 people
CU2.4 Classroom	Classroom	32	980	1	980	
CU2.5 Storage	Support		140	1	140	
CU2.6 Refrigeration	Support		180	1	180	
CU2.7 Dishwashing	Support		120	1	120	
CU3.0 Café						
CU3.1 Kitchen	High Intensity Lab		860	1	860	
CU3.2 Prep	Support		400	1	400	
CU3.3 Seating	Support	30	600	1	600	seating for 30 in Tables and Chairs
CU3.4 Storage	Support		300	1	300	30
CU3.5 Classroom	Classroom	32	980	1	980	
Total Net SF					10,590	
Mechanical	4%				424	
Walls / Partitions	9%				953	
Structure	2%				212	
Circulation / Restrooms	10%				1,059	
Total Estimated Gross SF					13,238	

PROGRAMMATIC CONNECTIONS



SPACE PLAN: ADJACENCY DIAGRAM



Programs



DIGITAL DESIGN

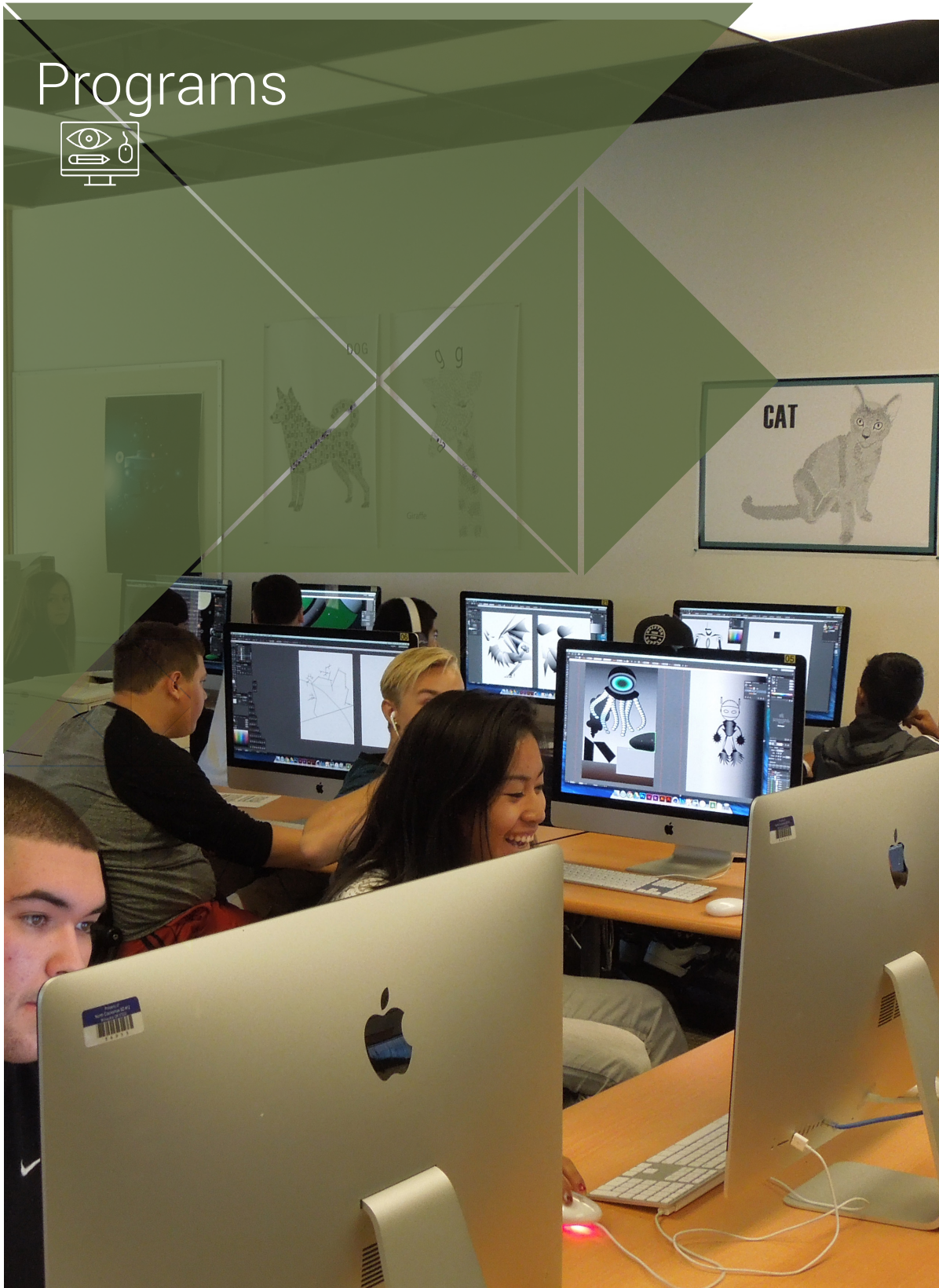


Photo by: NCSD

DIGITAL DESIGN

Courses in the Digital Design program offer animation, production, storyboarding, graphic design, digital to physical conversion and applications, team-based design and development management, and community engagement basics. College credit is available in this program.

This program works closely with shared resources in the Architecture & Design program.

Direct job applicability is noted for the following careers: Multimedia Artists • Art Directors • Animators • Graphic Designers

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

4,800 SF

CHARACTERISTICS

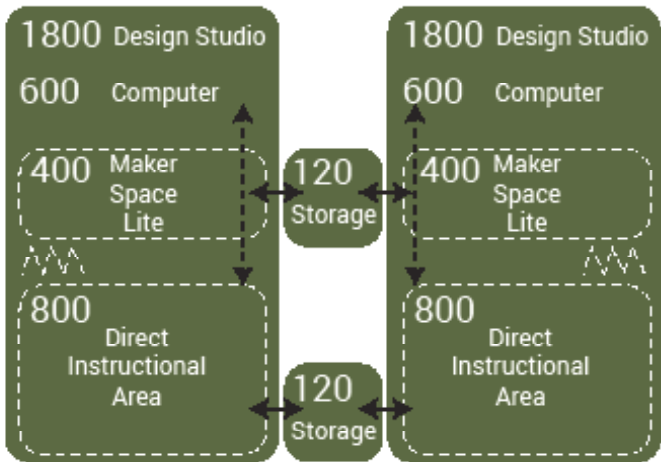
- focused computer to studio reviews
- highly visual with tackable space
- interface with industry partners

SPACE SPECIFICS & EQUIPMENT NEEDS

- community accessibility / after hours access
- flexible access to electrical power, possibly via cord reels from ceiling or floor boxes
- movable storage in lieu of built-in cabinetry
- mixture of standing-height and sitting height work settings
- maker space should be easily accessible / adjacent, yet secured separate from Computer/Direct Instructional Area
- access to digital displays in common areas for display of student work
- acoustic paneling / reconfigurable partitions for individual vs. group review
- “some design takes place on tablets” via tablet bank / cart
- access to computer lab for animation
- lighting in the space is zoned for different types of activities / work styles
- light tables & layout tables
- tackable surfaces
- mobile whiteboards
- programmable / interactive projectors
- vinyl cutter
- large format printer / plotter
- desktop CNC

Programs

SPACE PLAN: ADJACENCY DIAGRAM



↔ visual connection
 ↔ physical connection

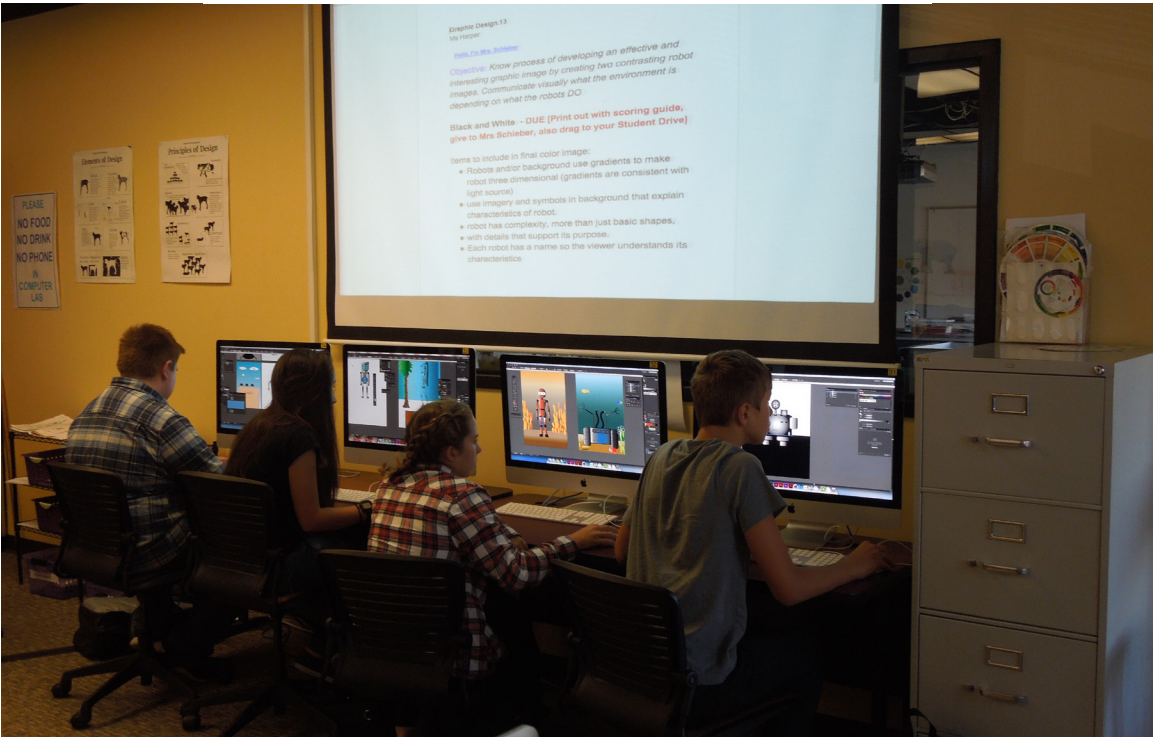
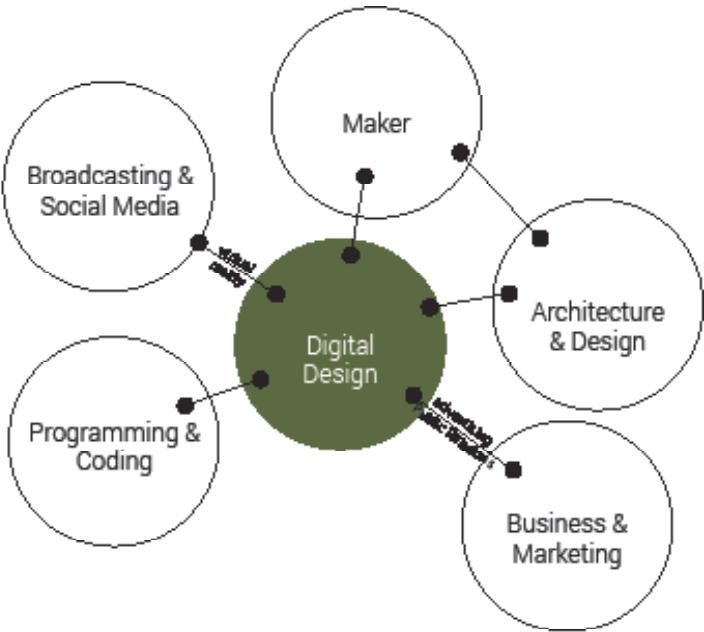
OPPORTUNITIES & GROWTH:

- future program development aims to better support animation, a profession noted to have projected growth and interest
- both animation and other visual compositions created in Digital Design should be supported with virtual reality & augmented reality accessibility alongside emphasis on 3D creation
- Digital Design, including animation, also has the potential to support Business and Marketing efforts, as well

PROGRAM BREAKDOWN:

Digital Design	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
DD1.1	Design Studio	High Intensity Lab	32	1,800	2	3,600	Graphic Design and Animation
	- Direct Instructional Area			800	-		
	- Maker Space Lite			400	-		
	- Computer			600	-		
DD1.3	Storage	Support		120	2	240	
Total Net SF						3,840	
Mechanical				4%		154	
Walls / Partitions				9%		346	
Structure				2%		77	
Circulation / Restrooms				10%		384	
Total Estimated Gross SF						4,800	

PROGRAMMATIC CONNECTIONS



Observed Digital Design students as provided by NCSD shown above.

Programs



EARLY CHILDHOOD



Photo by: NCSD

EARLY CHILDHOOD / TEACHER EDUCATION PATHWAY

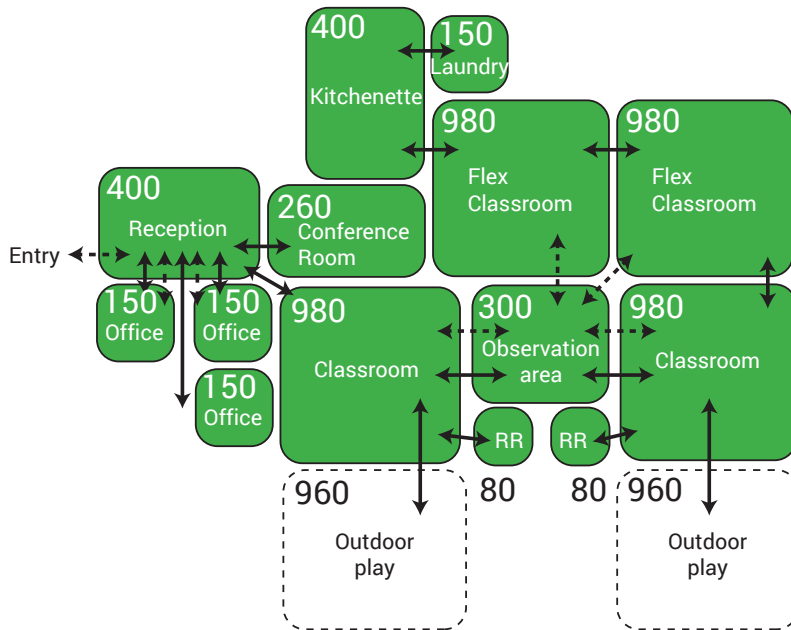
Courses in this program teach concepts of both early childhood development and effective concepts of teaching and learning. Students apply their learning of quality early childhood education as they plan activities and play with three, four and five year olds enrolled in the Early Learning Center Preschool, or as advanced students, in district secondary classrooms. College credit is available in this program.

Direct job applicability is noted for the following careers: Kindergarten, Elementary, and Secondary School Teachers • Special Education Teachers • Preschool Teachers

USER GROUPS	SPACE SPECIFICS & EQUIPMENT NEEDS
<div>Students</div> <div>Staff</div> <div>Community Members</div>	<ul style="list-style-type: none"> • provide secure entry vestibule • provide exterior signage and branding • provide access to natural daylighting • childcare spaces should have resources directly accessible from the instructional space, including, toilets, sinks, play areas • childcare spaces should provide childproof electrical outlets throughout the instructional space • provide lockable / tamper proof storage and cabinetry at room perimeter • provide secured and covered outdoor play space with age appropriate play equipment and surfacing • outdoor lighting in the entry, dropoff, and play areas for morning and evening use
PROSPECTIVE SIZE	
8,775 GSF	
CHARACTERISTICS	
<ul style="list-style-type: none"> • engages one on one • allows for direct and • indirect observation • secure 	

Programs

SPACE PLAN: ADJACENCY DIAGRAM

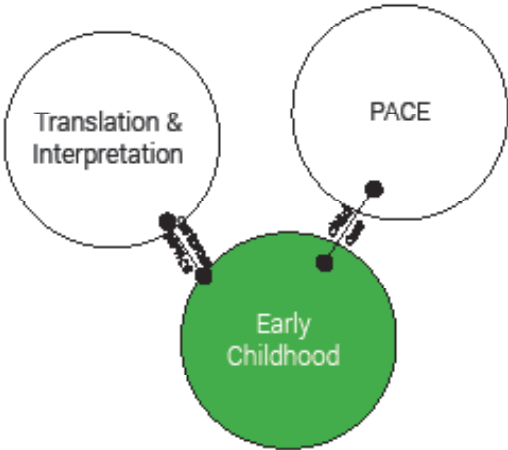


↔ visual connection
 ↔ physical connection

PROGRAM BREAKDOWN:

Early Childhood	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
EC1.1	Reception			400	1	400	
EC1.2	Classroom	Classroom	24-32	980	2	1,960	Visual connection to observation room required
EC1.3	Flex Classroom	Classroom	24-32	980	2	1,960	Visual connection to observation room if possible
EC1.4	Observation Area	Support	3-6	300	1	300	Visual connection to classroom required
EC1.5	Toilet Room	Support		80	2	160	
EC1.6	Outdoor Play	Outdoor		960	2		
EC1.7	Kitchenette	Support		400	1	400	
EC1.8	Office	Office		150	3	450	
EC1.9	Conference Room	Meeting		260	1	260	
EC1.10	Laundry Room	Support		150	1	150	
Total Net SF						6,040	
Mechanical				4%		242	
Walls / Partitions				9%		544	
Structure				2%		121	
Circulation / Restrooms				10%		604	
Total Estimated Gross SF						7,550	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH.

- an early childhood learning program within a CTE campus has potential to maximize preschool experiences for children through visiting the many programs on campus
- specifically, connections to PACE, Health Services, Culinary, Translation & Interpretation, and Design to enhance preschool experiences for children
- connection to PACE outdoor play could yield efficiency benefits



Early Learning students as provided by NCSD shown above.



Early Learning students at NCSD shown above.

Programs

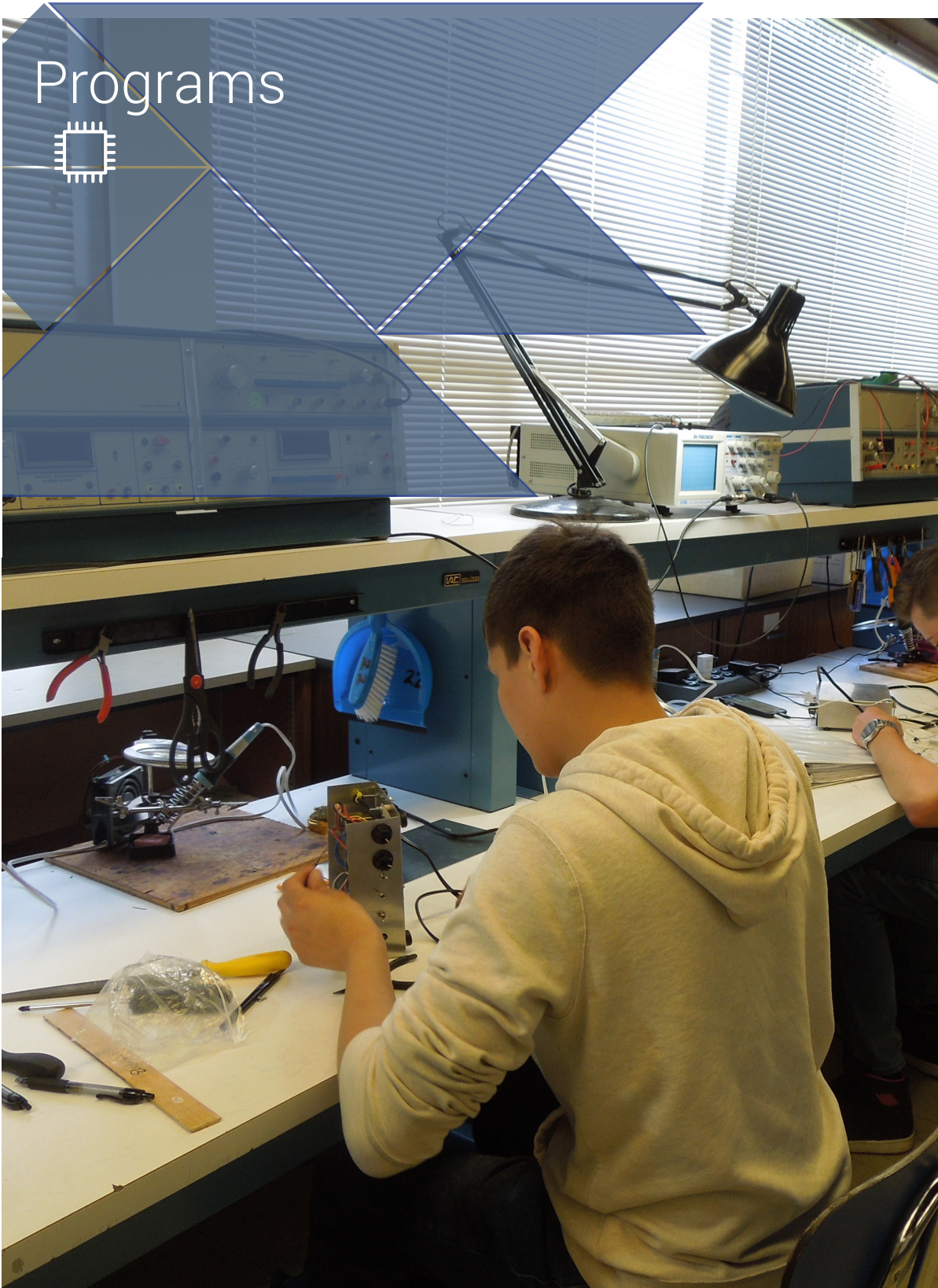


Photo by: NCSD

ELECTRONICS TECHNOLOGY

Courses in this program address principles, processes, and assembly of high tech electronics such as gaming devices, light displays, robotics, circuitry and circuit board design, and motion control design. This program shares resources with Manufacturing and Engineering and Aviation. College credit is available in this program.

Direct job applicability is noted for the following careers: Electrical and Electronics Engineers & Technicians • Computer Programmers • Industrial Engineers

USER GROUPS

Students
Staff
Community Members

SPACE SPECIFICS & EQUIPMENT NEEDS

- provide access to daylight for accuracy
- provide glass transparency between rooms for supervision
- access to maker space is desirable
- support for robotic arm project design and operations
- flexible access to electrical power, possibly via cord reels from ceiling or floor boxes
- upgrades to more power

PROSPECTIVE SIZE

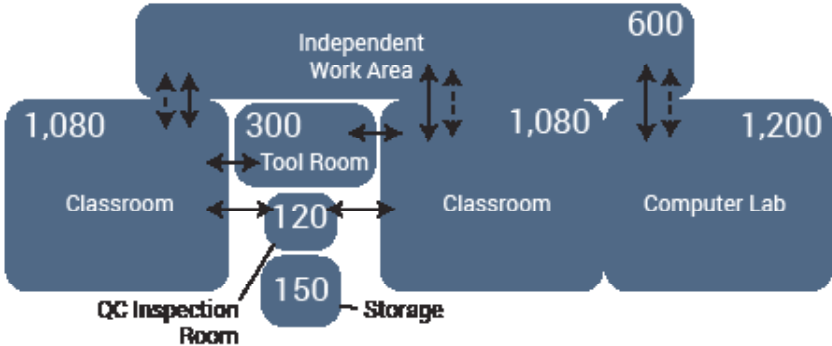
4,913 GSF

CHARACTERISTICS

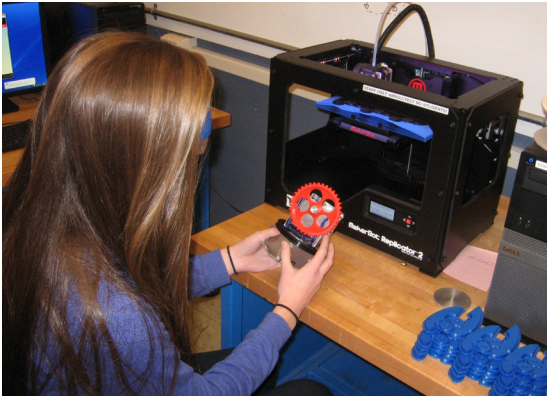
- open, fluid transitions
- flexible power access
- fluid group to independent work zones

Programs

SPACE PLAN: ADJACENCY DIAGRAM



--- visual connection
--- physical connection



Noticeable overlaps benefit from close proximity to the Maker Space, as shown above with a NCSD student using a 3D printer..

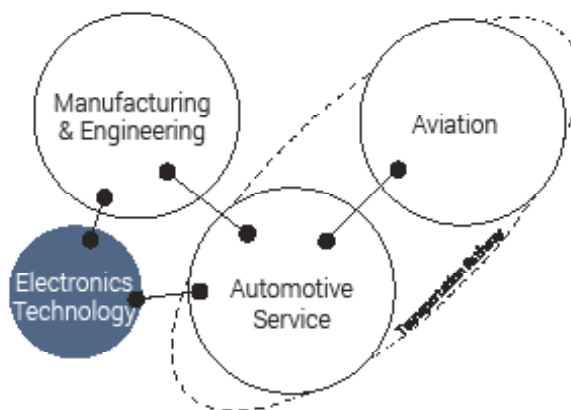


Tours revealed appreciation of natural light as observed at Sandy High School.

PROGRAM BREAKDOWN:

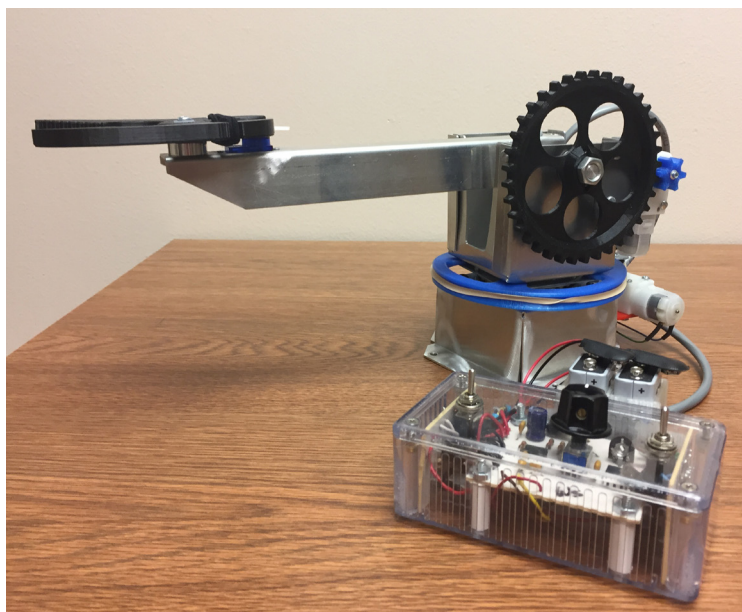
Electronics	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
EL1.1	Classroom	CTE Classroom	32	1,080	2	2,160	
EL1.2	Computer Lab	Flex Lab	32	1,200	1	1,200	
EL1.3	Tool Room	Support		300	1	300	
EL1.4	QC Inspection Room	Support		120	1	120	
EL1.5	Tool Storage	Support		150	1	150	
EL1.6	Independent work area	Support	18	600		-	
Total Net SF						3,930	
Mechanical						157	4%
Walls / Partitions						354	9%
Structure						79	2%
Circulation / Restrooms						393	10%
Total Estimated Gross SF						4,913	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH:

- career forecasting projects overlaps with Manufacturing & Engineering, Automotive Service Technology, and small-scale welding, to assist in careers aimed towards sustainable automobile technology development and fabrication
- focus on the computer lab with an integrated independent work area is crucial
- adjacency to Maker Space for small scale mock-up production is also crucial



NCSD small scale robotics often work with a robotic arm as pictured above. Noticeable overlap occurs between manufacturing of larger robotics, electronics, and welding in anticipation of careers focused on electric automobile technologies and renewable energy.



Open work space with power drops as designed for Crete High School, as shown above.

Programs



FIRE SCIENCE



Photo by: NCSD

FIRE SCIENCE

Courses in this program offer a fundamental understanding of history of fire science, safety and health, fire department communication, Personal Protective Equipment, building construction and fire behavior, fire control, fire prevention and emergency medical care. College credit is available in this program.

Direct job applicability is noted for the following careers: Firefighters • Police Dispatchers • Fire Dispatchers • Ambulance Dispatchers

USER GROUPS

Students
Staff
Community Members

SPACE SPECIFICS & EQUIPMENT NEEDS

- outdoor area for Fire Science must be “mostly” concrete/ asphalt with access to a structure
- storage space for parking two fire engines must be at least 26 feet wide and 35 feet deep; it must have space to open the doors and walk around the rigs (both indoor and outdoor)
- access to an operable fire hydrant for simulation enhancement

PROSPECTIVE SIZE

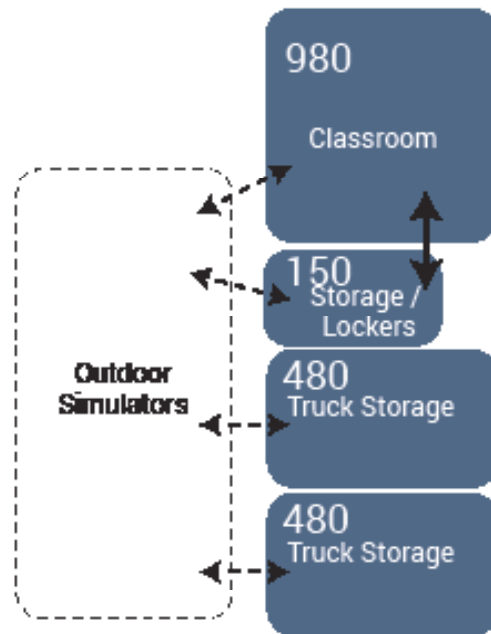
2,613 GSF

CHARACTERISTICS

- personal storage
- surfaces to support extreme water pressure and vehicle loads
- vehicular navigation

Programs

SPACE PLAN: ADJACENCY DIAGRAM



↔ visual connection
 ↔ physical connection

PROGRAM BREAKDOWN:

FireSpace Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
Fire1.1 Classroom	Classroom	32	980	1	980	
Fire1.2 Lockers / Uniform Storage	Support		150	1	150	
Fire1.3 Indoor Fire Truck Storage	Support		480	2	960	fire truck 8'x24' (outdoor covered optional)
Total Net SF					2,090	
Mechanical	4%				84	
Walls / Partitions	9%				188	
Structure	2%				42	
Circulation / Restrooms	10%				209	
Total Estimated Gross SF					2,613	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH:

- workshops noted potential partnerships with the local fire authority could support the course curriculum and spaces (specifically, via a shared training facility) available in this program
- Fire Science and Law Enforcement have noticeable overlaps when it comes to locker and storage support, exterior and interior demonstrations, and exterior and interior skills navigation



NCSD Fire Sciences students.



NCSD Fire Sciences students.



NCSD Fire Sciences students.

Programs



FORESTRY



Photo by: NCSD

FORESTRY

Courses in this program cover aspects of forest management and natural resources including how to climb trees, operate a chain saw and other forestry-related heavy equipment, identify tree species, use navigation tools and read and interpret maps. Students learn the importance of balancing economics, recreation, and the environment with our limited natural resources. College credit is available at all levels of this program.

Direct job applicability is noted in the following careers: • Foresters • Park Rangers • Loggers • Conservation Biologists • Scientists and Technicians • Managers working for private industry or government agencies

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

1,500 GSF

CHARACTERISTICS

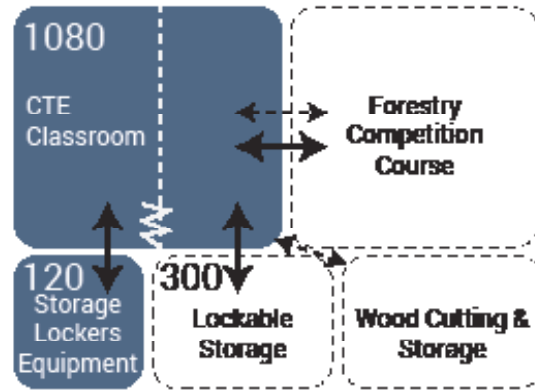
- adequate personal storage
- supports map making and nature documentation
- agile transition from interior and exterior

SPACE SPECIFICS & EQUIPMENT NEEDS

- locker and storage space with ventilation for wet clothing and boots
- no carpet in classroom
- (2) restrooms for clothes changing and personal lockers
- secure storage shed for equipment including chainsaw chain sharpening area
- covered storage space for tractor and Forestry vehicle and trailer
- located near large well established trees for arbor climbing
- lot for wood cutting and storage
- navigation tools and map making supplies
- lockable exterior storage

Programs

SPACE PLAN: ADJACENCY DIAGRAM



<---> visual connection
 <==> physical connection



Photo by Maryland FFA.

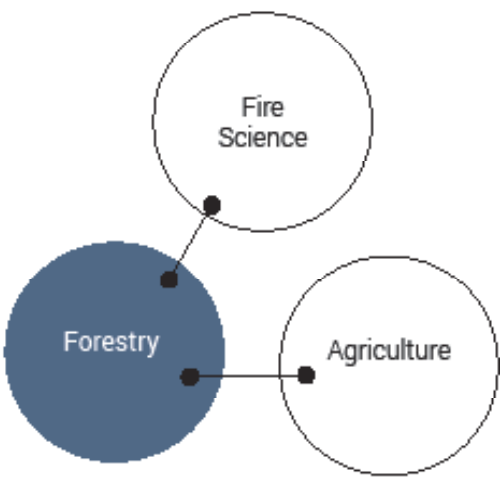


Photo by LearnForests.org via Oregon Envirothon.

PROGRAM BREAKDOWN:

Forestry Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
FR1.1 CTE Classroom	CTE Classroom	32	1,080	1	1,080	
FR1.2 Storage	Support		120	1	120	
FR1.3 Exterior Lockable Storage	Support		300	1	-	
FR1.4 Forestry Competition Course	Outdoor				-	
FR1.5 Wood Cutting & Storage	Outdoor				-	
Total Net SF					1,200	
Mechanical					48	4%
Walls / Partitions					108	9%
Structure					24	2%
Circulation / Restrooms					120	10%
Total Estimated Gross SF					1,500	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH:

- projected aid and practice in observation of forest fires and natural disaster recovery efforts



NCSD Forestry students as shown above by NCSD

FORESTRY

Programs



HEALTH SERVICES



Photo by: NCSD

HEALTH SERVICES

Courses work to support students who may be interested in careers in the medical industry. Courses target exposure to human anatomy and medical terminology, noticeable trends in patient safety and disease transmission, and the beginnings of health care and injury prevention skills-building. College credit is available in this program.

Direct job applicability is noted for the following careers: Dentists & Dental Hygienists • Pharmacists • Physicians & Surgeons • Physicians Assistants • Registered Nurses & Nurse Practitioners • Veterinarians

USER GROUPS

Students
Staff
Community Members

SPACE SPECIFICS & EQUIPMENT NEEDS

PROSPECTIVE SIZE

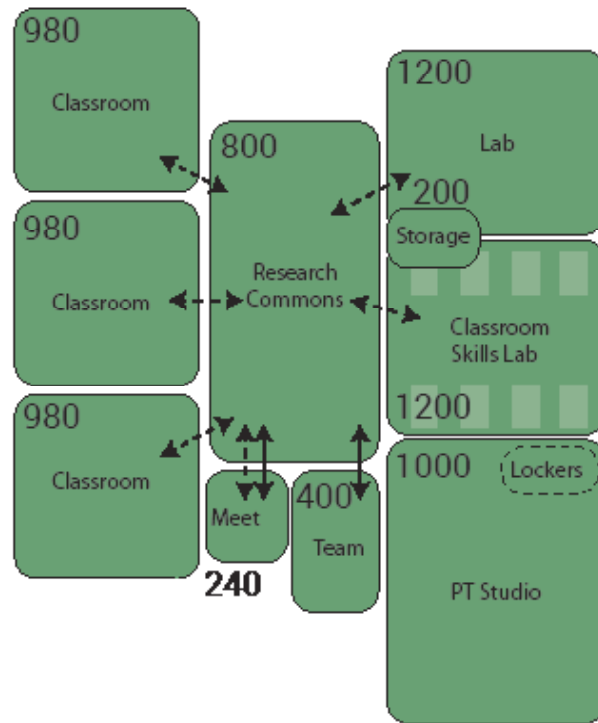
9,975 GSF

CHARACTERISTICS

- provide access to natural daylight
 - ensure that all doors are wide enough to accommodate a hospital bed
 - provide foot controlled sinks at lab for sanitation
 - transparency between labs and classrooms for improved supervision
 - provide accommodations for assembly types use of 60-80 people
 - Physical Therapy (PT) can be integrated into Health Services Suite or located adjacent to a health and fitness area on campus
 - furniture should be easily re-configurable to allow for varying work settings
 - finishes should be carefully consider to balance cleanability and acoustics
 - hard surface floor is preferred
 - refrigeration
 - laptop carts
 - projectors
 - durable medical equipment
- assembly to lab agility
 - well-connected and transparent

Programs

SPACE PLAN: ADJACENCY DIAGRAM

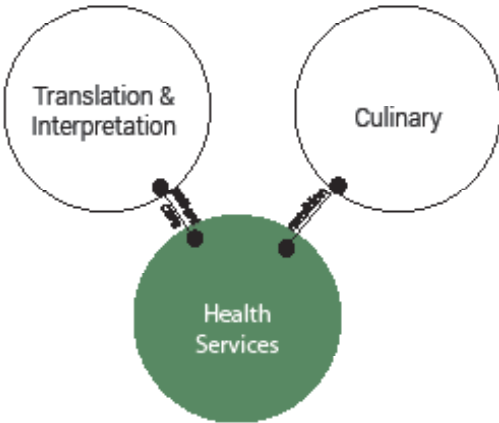


↔ visual connection
 ↔ physical connection

PROGRAM BREAKDOWN:

Health Services Space Use		Space Type	Capacity	NSF	QTY	Total NSF	Comment
HC1.1	Classroom	Classroom	35	980	3	2,940	(900 SF) PT space currently in portable
HC1.2	Skills Lab	Flex Lab	22	1,200	1	1,200	8 Hospital Beds (Can be configured to 4 hospital rooms)
HC1.3	Lab	Flex Lab	35	1,200	1	1,200	Dissections / science lab
HC1.4	Research Commons	Classroom		800	1	800	
HC1.5	Physical Therapy Studio	CTE Classroom		1,000	1	1,000	Connect to fitness if possible
HC1.6	Meeting Space	Meeting	8-10	240	1	240	
HC1.7	Storage	Support		200	1	200	
HC1.8	Lockers	Support		-		-	included in gross sf
HC1.9	Team Office	Large Office	4	400	1	400	4 Staff
Total Net SF						7,980	
Mechanical						319	4%
Walls / Partitions						718	9%
Structure						160	2%
Circulation / Restrooms						798	10%
Total Estimated Gross SF						9,975	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH:

- connections and industry relations to physical therapy is ideal, with further connection to a supporting wellness or fitness center available to the surrounding community
- connection to a research commons or research library is also desired as this program tends to move between research and labs fairly quickly



Health Services students as provided by NCSD shown above.



Tours revealed an appreciation for bed arrangements as observed at Sandy High School shown above.



Physical Therapy equipment as observed during focus group activities at NCSD shown above.

Programs



Photo by: NCSD

LAW ENFORCEMENT

Courses in this program present fundamental exposure to the history of law enforcement, alongside police policy and criminal justice laws. Students directly engage with defense and arrest technique, physical training, and prevention and apprehension means and methods. College credit is available in this program.

Direct job applicability is noted for the following careers: Correctional Officers & Jailers • Police & Sheriff's Patrol Officers • Probation Officers • Correctional Treatment Specialists

USER GROUPS

Students
Staff
Community Members

SPACE SPECIFICS & EQUIPMENT NEEDS

- provide direct access to outdoor area.
- provide indoor or covered parking for patrol cars.
- provide dedicated Crime Scene Investigation (CSI) room with associated storage
- outdoor area on asphalt needed for traffic stop/accident report simulations

PROSPECTIVE SIZE

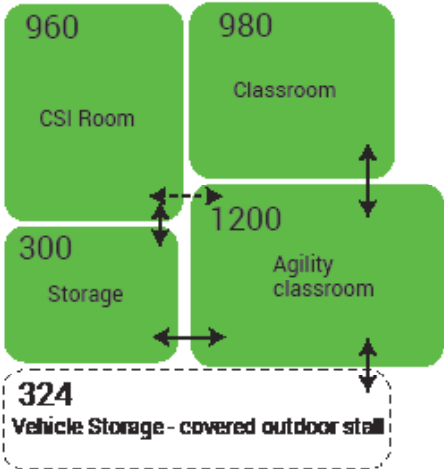
4,705 GSF

CHARACTERISTICS

- engages one on one
- supports combat skills building both indoors and outdoors
- supports community engagement and integration

Programs

SPACE PLAN: ADJACENCY DIAGRAM



<--- visual connection
 <== physical connection



NCSD Law Enforcement students.

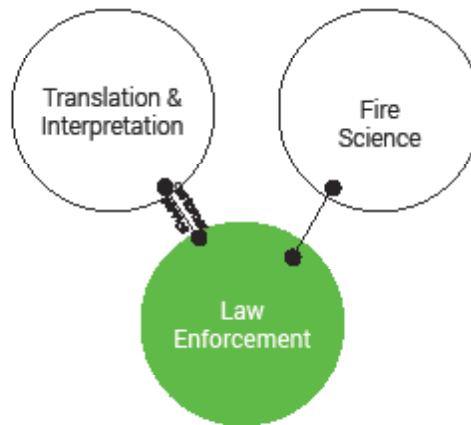


NCSD Law Enforcement students.

PROGRAM BREAKDOWN:

Law Enforcement	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
LE1.1	Classroom	Classroom	32	980	1	980	
LE1.2	Agility Classroom	Flex Lab	32	1,200	1	1,200	
LE1.3	Storage	Support		300	1	300	
LE1.4	CSI Room	Classroom		960	1	960	
LE1.5	Indoor Police Vehicle Storage	Support		162	2	324	9'x18' parking space (Outdoor covered optional)
Total Net SF						3,764	
Mechanical						151	
Walls / Partitions						339	
Structure						75	
Circulation / Restrooms						376	
Total Estimated Gross SF						4,705	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH:

- workshops noted potential partnerships with the local law enforcement professionals could support the course curriculum available in this program
- Fire Science and Law Enforcement have noticeable overlaps when it comes to locker and storage support, exterior and interior demonstrations, and exterior and interior skills navigation



NCSD Law Enforcement students.

Programs



Photo by: NCSD

MANUFACTURING & ENGINEERING

Courses in this program address the initial design and fabrication of everyday items and advances to robotics design and machining with progressive fabrication techniques, including welding. This program shares several resources with Architecture and Design, and well as Automotive Service Technology. College credit is available in this program.

Direct job applicability is noted for the following careers: Mechanical Engineers • Computer-Controlled Machine Tool Operators • Pipefitters & Steamfitters • Sheet Metal Workers • Structural Metal Fabricators & Fitters • Machinists • Welders • Electrical and Electronics Engineers & Technicians • Computer Programmers • Industrial Engineers

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

19,588 SF

CHARACTERISTICS

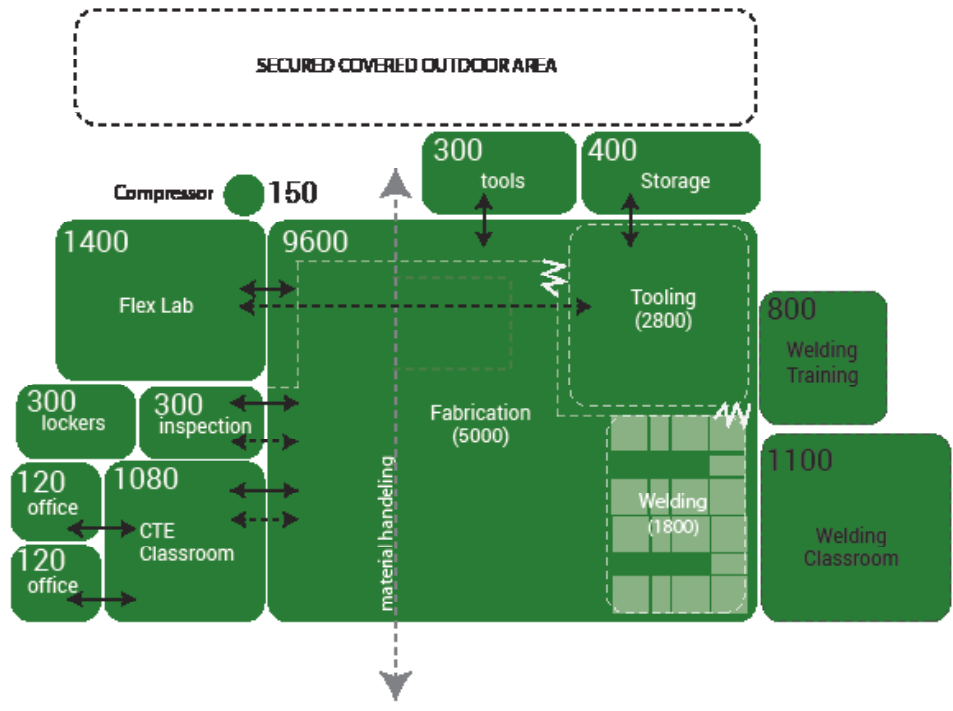
- outdoor / indoor
- flexible furnishings
- fabrication
- well-connected

SPACE SPECIFICS & EQUIPMENT NEEDS

- sightlines throughout the entirety of shop area, and clear access control of shop areas, i.e. primary access to shop is through adjacent classrooms
- provide glass / transparency into shop area from adjacent instructional spaces for supervision, and associated teaching space separation and acoustic control within shop areas
- provide centralized shop emergency "shut-off"
- provide centralized zoned lighting control, maximized daylighting throughout shop areas, high light reflecting surfaces (floor, walls, ceilings), and task lighting at focused work areas
- partially covered / secured outdoor work area directly accessible from shop area, and high efficiency racking in storage areas
- flexible access to electrical power, possibly via cord reels from ceiling or floor boxes (220 v service)
- flexible materials handling via overhead hoists / forklift throughout
- separate "dirty" and clean areas to greatest extent possible due to dust's damaging effect on technology and sinks
- special consideration to wifi access in the welding areas, currently welding machine magnetic field limits access to wifi
- (30) tooling stations and (30) welding stations
- computers / 3D printers (design lab)
- video / voice communications, power and data for maximum flexibility

Programs

SPACE PLAN: ADJACENCY DIAGRAM

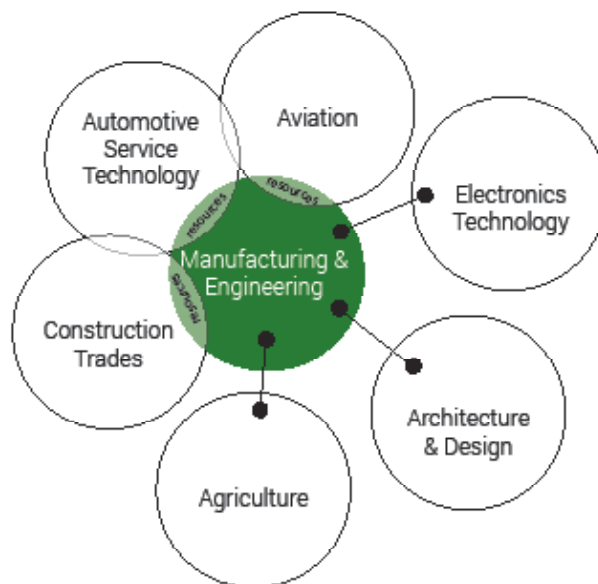


PROGRAM BREAKDOWN:

Full Professional Partner

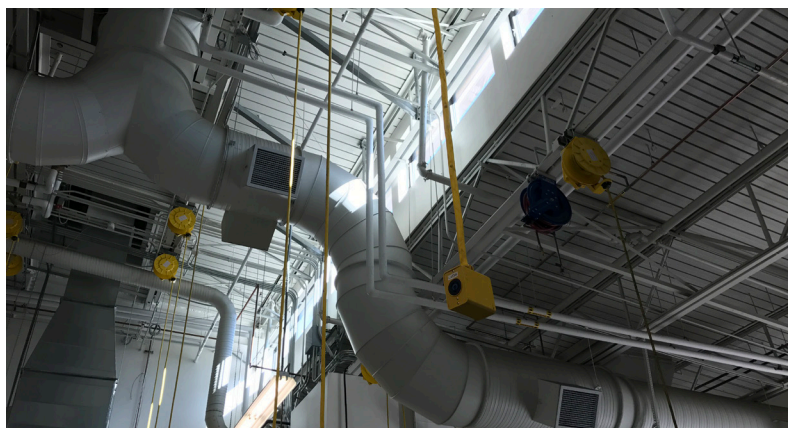
ManufacturingSpace Use		Space Type	Capacity	NSF	QTY	Total NSF	Comment
MF1.1	Tooling	Specialized Learning	36	2,800	1	2,800	30 tooling stations
MF1.2	Welding	High Intensity Lab	36	1,800	1	1,800	30 Stations (possible change due to Welding Training Center)
MF1.5	Fabrication	Specialized Learning	36	5,000	1	5,000	
MF1.6	CTE Classroom	CTE Classroom	36	1,080	1	1,080	
MF1.7	Flex Lab	Flex Lab	36	1,400	1	1,400	Computers / 3D Printers
MF1.8	Inspection Lab	Support		300	1	300	Shared with Aviation / Auto
MF1.9	Storage	Support		400	1	400	
MF1.10	Compressor	Support		150	1	150	
MF1.11	Tools Crib	Support		300	1	300	
MF1.12	Outdoor Area	Outdoor				-	Covered / Securable
MF1.13	Office	Small Office	1	120	2	240	
MF1.14	Lockers	Support		300	1	300	
Professional Welding Training Area							
MF1.15	Welding Training Area	High Intensity Lab		800	1	800	Option Program
MF1.16	Welding Training Classroom	CTE Classroom	36	1,100	1	1,100	Option Program
Total Net SF						15,670	
Mechanical						627	
Walls / Partitions						1,410	
Structure						313	
Circulation / Restrooms						1,567	
Total Estimated Gross SF						19,588	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES

- as this is a professional-level training program, a partnership with local welding professionals is noted
- partnership with an area practitioner satisfies this program's goal to provide opportunities for real world applications
- maximization of sheet metal storage and applicable tool proximity along with tool adjacency and alignment of overall support zone / corridor
- group settings to engage one another visually with holding main entrances with high action spaces
- exposed systems would also allow for teaching beyond the classroom



Tours revealed appreciation of adequate power drops as observed at Sandy High School.



Tours revealed appreciation of various equipment types as observed at Sandy High School.



Manufacturing & Engineering student as provided by NCSD shown above.

Programs



Photo at Elkhorn West Bay Elementary School

PACE

NCSD's Parenting, Academics, Careers, and Employment (PACE) program is designed to support pregnant and parenting students navigating both parenthood and the completion of their high school diploma simultaneously. Daycare is provided for teen parents while they attend courses onsite, as well as access to a wealth of community resources.

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

7,750 GSF
8 toddlers
8 mobiles
12 infants

CHARACTERISTICS

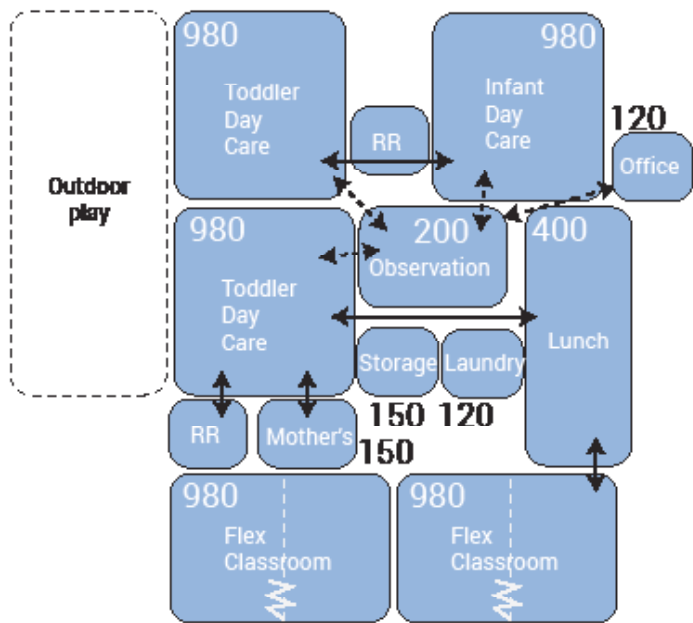
- engages one on one
- allows for direct and
- indirect observation
- secure

SPACE SPECIFICS & EQUIPMENT NEEDS

- required by Oregon Statutes for licensed day cares:
- adult handwashing sinks in Toddler and Infant Day Care Rooms
- dishwasher in Infant Day Care Room
- child restrooms adjacent to, and child-height handwashing sink in, Child Care Room
- Outdoor Play Area adjacent to Child Care Room
- design should consider the appropriate adjacency of PACE child care areas with PACE instructional areas (the intent is to minimize the distraction of students)
- childcare spaces should have resources directly accessible from the instructional space, including, toilets, sinks, play areas
- childcare spaces should provide childproof electrical outlets throughout the instructional space
- lunch space with access to respective infant / toddler day care spaces
- provide lockable / tamper proof storage and cabinetry at room perimeter
- provide secured and covered outdoor play space with age appropriate play equipment and surfacing
- provide a secure entry vestibule

Programs

SPACE PLAN: ADJACENCY DIAGRAM

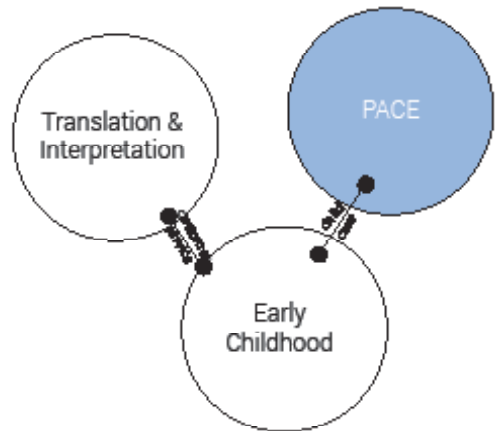


↳↳ visual connection
 ↳↳ physical connection

PROGRAM BREAKDOWN:

PACESpace Use		Space Type	Capacity	NSF	Total		Comment
				QTY	NSF		
PC1.1	Flex Classroom	Classroom	8-10	980	2	1,960	Space is divisible by 2
PC1.2	Lunch Room	Support	10-20	400	1	400	
PC1.3	Office	Small Office	1	120	1	120	
PC1.4	Infant Classroom	Classroom	10-20	980	1	980	
PC1.5	Toddler Classroom	Classroom	24-32	980	2	1,960	
PC1.6	Toilet Room	Support		80	2	160	Directly accessible to classroom
PC1.7	Observation	Support	2-3	200	1	200	
PC1.8	Laundry	Support		120	1	120	
PC1.9	Storage	Support		150	1	150	
PC1.10	Mother's Room	Support	1	150	1	150	
Total Net SF						6,200	
	Mechanical	4%				248	
	Walls / Partitions	9%				558	
	Structure	2%				124	
	Circulation / Restrooms	10%				620	
Total Estimated Gross SF						7,750	

PROGRAMMATIC CONNECTIONS:



OPPORTUNITIES & GROWTH:

- connection to Early Learning’s outdoor play could yield efficiency benefits
- could have adequate storage to also support Translation & Interpretation, if beneficial
- noted in focus group: PACE, Health Services, Culinary, Translation & Interpretation, and Design to enhance preschool experiences for children



Day care setting at Alpha Hart Lewis School



Day care setting at Elkhorn West Dodge ..

Programs



Photo by: NCSD

PROGRAMMING & CODING

Courses offer an introduction to concepts and techniques in game design, animation, and mobile app development through strategic coding design and development, data interpretation, and solution marketing. This program has shared resources with Electronics Technology and Manufacturing & Engineering. College credit is currently pending for this program.

Direct job applicability is noted for the following careers: Web Developers • Computer Programmers & Software Developers • Game Developers • App Developer

USER GROUPS

Students
Staff
Community Members

PROSPECTIVE SIZE

1,500 GSF

SPACE SPECIFICS & EQUIPMENT NEEDS

- glare on computer screens should be carefully considered in the design of the natural daylighting
- computer labs / desktop
- computers
- video / voice communication
- power and data located for maximum flexibility
- zoned lighting
- re-configurable furniture and easily changed display
- moveable stations and operable partitions

CHARACTERISTICS

- lab to presentation
- desktop computers
- supportive of several facets of digital presentation

Programs

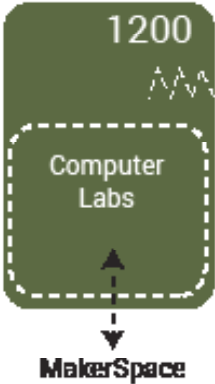
SPACE PLAN: ADJACENCY DIAGRAM



Tours revealed appreciation of visible parts and fabrication strategies as observed at Sno-Isle TECH.



Tours revealed several strategies for computer lab arrangement / layout, as observed at Sandy High School.

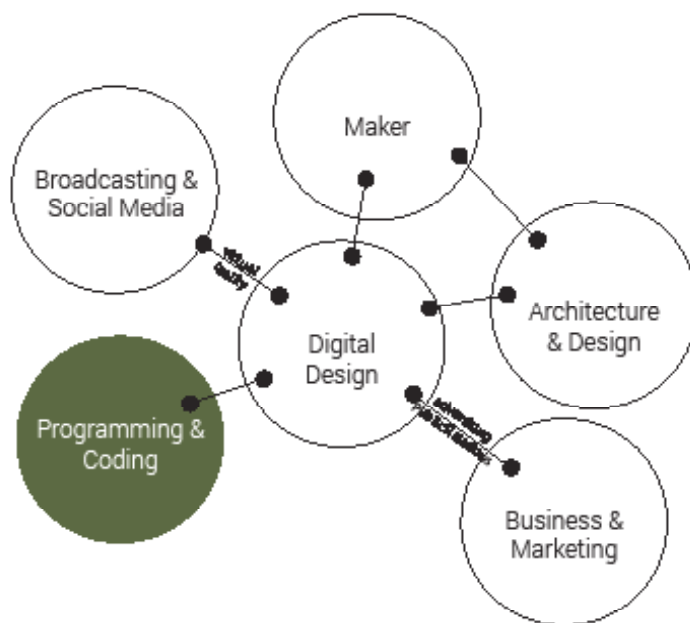


- ↔ visual connection
- ↔ physical connection

PROGRAM BREAKDOWN:

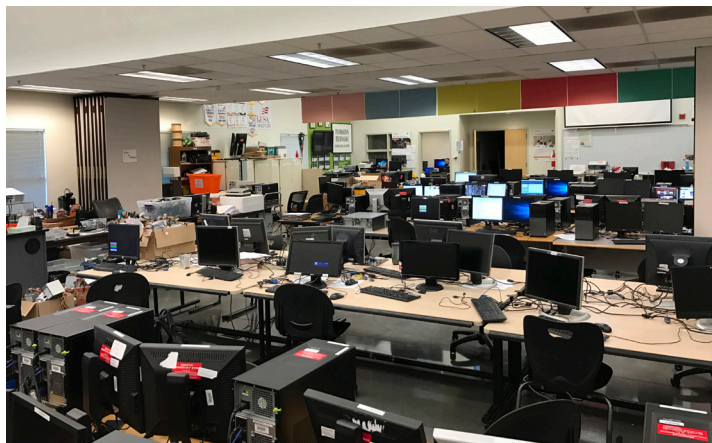
Programming and Coding Space Use		Space Type	Capacity	NSF	QTY	Total NSF	Comment
PC1.1	Classroom	Flex Lab	32	1,200	1	1,200	Device Storage may be needed
Total Net SF						1,200	
Mechanical						48	
Walls / Partitions						108	
Structure						24	
Circulation / Restrooms						120	
Total Estimated Gross SF						1,500	

PROGRAMMATIC CONNECTIONS:

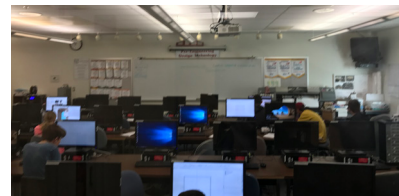


OPPORTUNITIES & GROWTH:

- game design is noted as a trending profession, and this program space should work to support course worked aimed at game composition and user experience testing
- Architecture & Design and Digital Design could benefit from shared computer labs
- Digital Design and Animation are shared spaces, which could also benefit from close proximity to Programming & Coding



Tours revealed several strategies for computer lab arrangement / layout, as observed at Cascadia Technical Academy shown above.



Tours revealed an appreciation for certain computer lab layouts as observed at Sandy High School shown above.



Tours revealed an appreciation for certain computer lab layouts as observed at Sandy High School shown above.

Programs



Photo by: NCSD

TRANSLATION & INTERPRETATION

Translation and Interpretation is available to students fluent in two or more languages and interested in engaging the many facets of professions who benefit from language. College credit is currently pending for this program.

Direct job applicability is noted for the following careers: • Interpreters & Translators

USER GROUPS

Students
Staff
Community Members

SPACE SPECIFICS & EQUIPMENT NEEDS

- secure cabinets for storage of equipment
- equipment is stored in classroom space and easily accessed for class
- access to laptop computers is essential

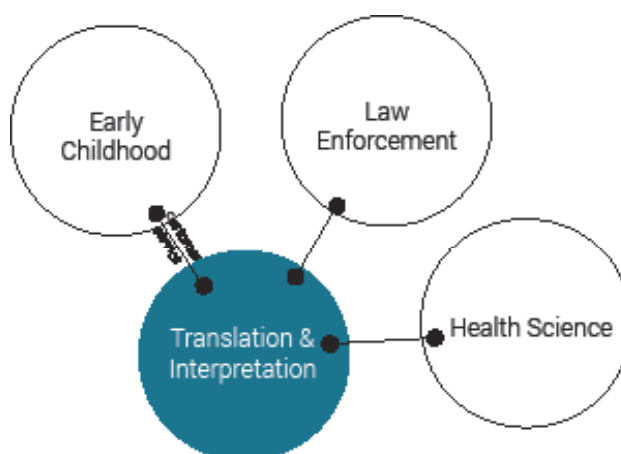
PROSPECTIVE SIZE

shared 980 GSF

PROGRAM BREAKDOWN:

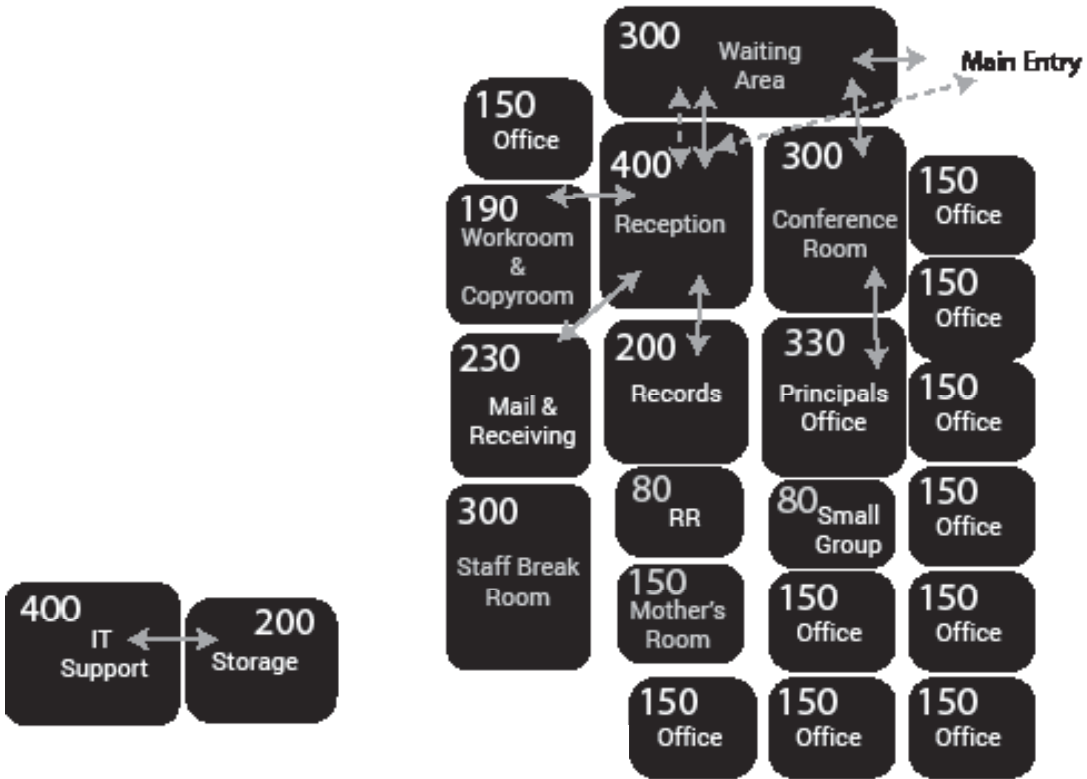
- engages one on one
- acoustically enhanced space
- video conference enabled

PROGRAMMATIC CONNECTIONS:



ADMINISTRATION

Space allocated for administrative purposes is classified as a supporting space, or spaces that work to provide services to students and staff in all programs.



COMMUNITY

This conferencing space for community members is classified as a shared resource, or support space, available to those who may benefit from having a community meeting space on campus.



<---> visual connection
 <==> physical connection

PROGRAM BREAKDOWN:

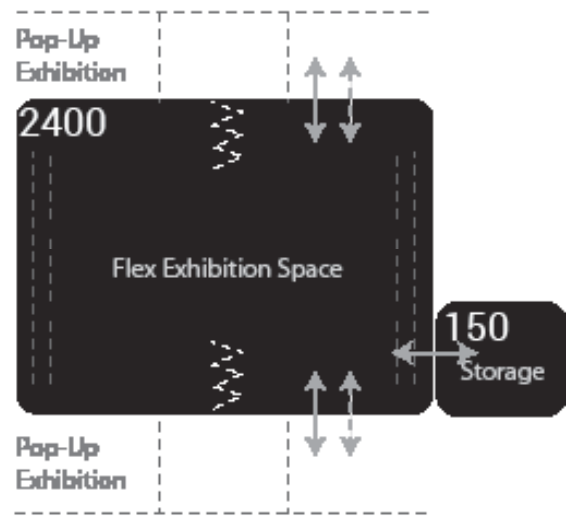
Administration	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
AD1.1	Waiting Area	Medium Group	8-10	300	1	300	
AD1.2	Reception	Medium Group	2-4	400	1	400	
AD1.3	Work & Copy Room	Support		190	1	190	
AD1.4	Mail & Receiving Room	Support		230	1	230	Adjacent to Reception Area
AD1.5	Conference Room	Meeting Space	10	300	1	300	
AD1.6	Small Group	Meeting Space	2-3	80	1	80	
AD1.7	Office - Principal	Medium Office	1-2	330	1	330	
AD1.8	Office	Individual		150	10	1,500	AP, Dean , Learning Specialist, Vice Principal, Attendance / Student Management, SRO, Nurse's station, Bookkeeper, Attendance, Campus Monitor
AD1.9	Records - Supply Storage	Support		200	1	200	
AD1.10	IT Support	Medium Group	1-2	400	1	400	Central to one Campus
AD1.11	IT Storage	Support		200	1	200	Locate one on both Campus
AD1.12	Unisex ADA Toilet Room	Support		80	1	80	
AD1.13	Staff Break Room	Medium Group	5-10	300	1	300	Dining and Kitchen
AD1.14	Mother's Room	Individual	1	150	1	150	
Total Net SF						10,948	
Mechanical						438	
Walls / Partitions						985	
Structure						219	
Circulation / Restrooms						1,095	
Total Estimated Gross SF						13,685	

PROGRAM BREAKDOWN:

Community	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
CU1.1	Dining Commons	Assembly Space		2,500	1	2,500	
CU1.2	Conference Room			320	1	320	
Total Net SF						2,820	
Mechanical						113	
Walls / Partitions						254	
Structure						56	
Circulation / Restrooms						282	
Total Estimated Gross SF						3,525	

EXHIBITION

This display and review space is classified as a shared resource, or support space, for use by students and staff in all programs.

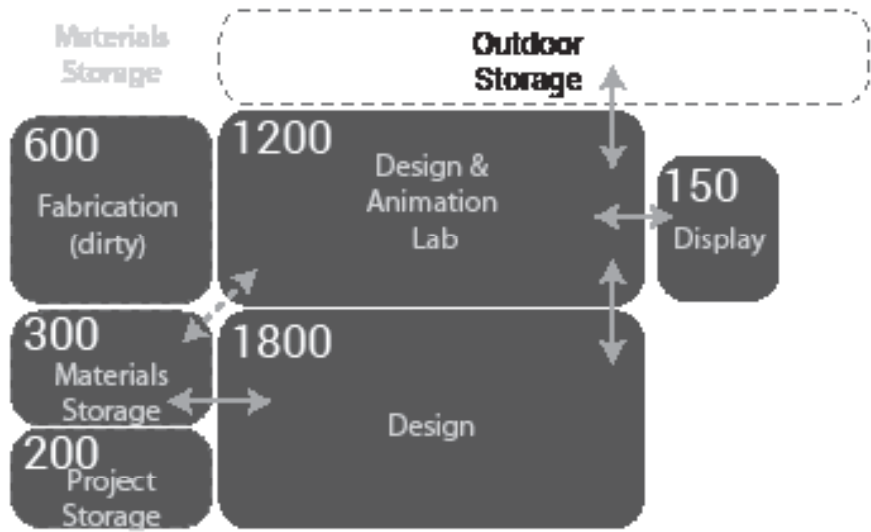


PROGRAM BREAKDOWN:

Exhibition	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
EX1.1	Flex Exhibition Space	Assembly Space	200-300	2,400	1	2,400	Demonstration of learning, guest speakers, collaboration
EX1.2	Storage	Support			1	150	
EX1.3	Pop-up Exhibition Spaces	Support			4	50	Unprogrammed Space for student exhibition / curation of work
EX1.4	Student work display areas	Support					
Total Net SF						2,600	
	Mechanical	4%				217	
	Walls / Partitions	9%				488	
	Structure	2%				108	
	Circulation / Restrooms	10%				542	
Total Estimated Gross SF						3,955	

MAKER SPACE

The Maker Space is classified as a shared resource or support program across all programs who benefit from separate fabrication and production space.



PROGRAM BREAKDOWN:

Maker Space	Space Use	Space Type	Capacity	NSF	QTY	Total NSF	Comment
MS1.0	Fabrication - Dirty	Flex Lab		600	1	600	CNC, Drill Presses, Saws, etc., Dust Collector
MS1.1	Design & Fabrication - Clean	High Intensity Lab		1,800	1	1,800	3D Printers, Laser Cutters, 3D Cutters, Computers, etc.
MS1.2	Design & Animation Lab	Flex Lab		1,200	1	1,200	Computer Lab
MS1.3	Materials Storage	Support		300	1	300	
MS1.4	Project Storage	Support		200	1	200	
MS1.5	Project Display	Support		150	1	150	
Total Net SF						4,250	
Mechanical						170	4%
Walls / Partitions						383	9%
Structure						85	2%
Circulation / Restrooms						425	10%
Total Estimated Gross SF						5,313	

THE NATION-WIDE VIEW

STATE-BY-STATE, APPLIED LEARNING SPECIFICS

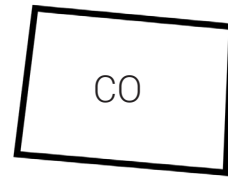
In total, there are 16 Career Clusters in the National Career Clusters Framework, representing more than 79 Career Pathways to help students navigate their way to greater success in college and career.



- » azed.gov/career-technical-education
- » careertech.org/arizona



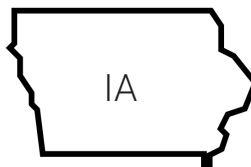
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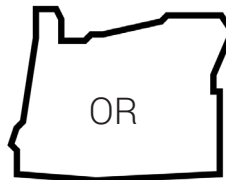
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- » mdctedata.org
- » careertech.org/maryland

A RECOGNIZED FRAMEWORK - NATIONAL CAREER CLUSTERS

The 19 programs offered, or to be offered, by North Clackamas School District, represent careers in 15 of the 16 National Career Clusters.



Agriculture, Food & Natural Resources

- Agribusiness Systems
- Animal Systems
- Environmental Service Systems
- Food Products and Processing Systems
- Natural Resources and Plant Systems



Architecture & Construction

- Construction
- Design and Pre-Construction
- Maintenance and Operations



Arts, AV Tech & Communication

- Audio/Video Technology and Film
- Journalism and Broadcasting
- Performing Arts
- Printing Technology
- Telecommunications
- Visual Arts



Business Management & Administration

- Administrative Support
- Business Information Management
- General Management
- Human Resources Management
- Operations Management



Hospitality & Tourism

- Lodging
- Recreation, Amusements and Attractions
- Restaurants and Food and Beverage Services
- Travel and Tourism



Human Services

- Consumer Services
- Counseling and Mental Health Services
- Early Childhood Development and Services
- Family and Community Services
- Personal Care Services



Information Technology

- Information Support and Services
- Network Systems
- Programming and Software Development
- Web and Digital Communication



Law, Public Safety, Corrections & Security

- Correction Services
- Emergency and Fire Management Services
- Law Enforcement Services
- Legal Services
- Security and Protective Services



Education & Training

- Administration and Administrative Support
- Professional Support Services
- Teaching and Training



Finance

- Accounting
- Banking Services
- Business Finance
- Insurance
- Securities and Investments



Government & Public Education

- Foreign Service
- Governance
- National Security
- Planning
- Public Management and Administration
- Revenue and Taxation



Health Science

- Biotechnology Research and Development
- Diagnostic Services
- Health Informatics
- Support Services
- Therapeutic Services



Manufacturing

- Health, Safety and Environmental Assurance
- Logistics and Inventory Control
- Maintenance, Installation and Repair
- Manufacturing Production Process Development



Marketing, Sales & Service

- Marketing Communications
- Marketing Management
- Market Research
- Merchandising
- Professional Sales



Science, Technology, Engineering & Math

- Engineering and Technology
- Science and Mathematics



Transportation, Distribution & Logistics

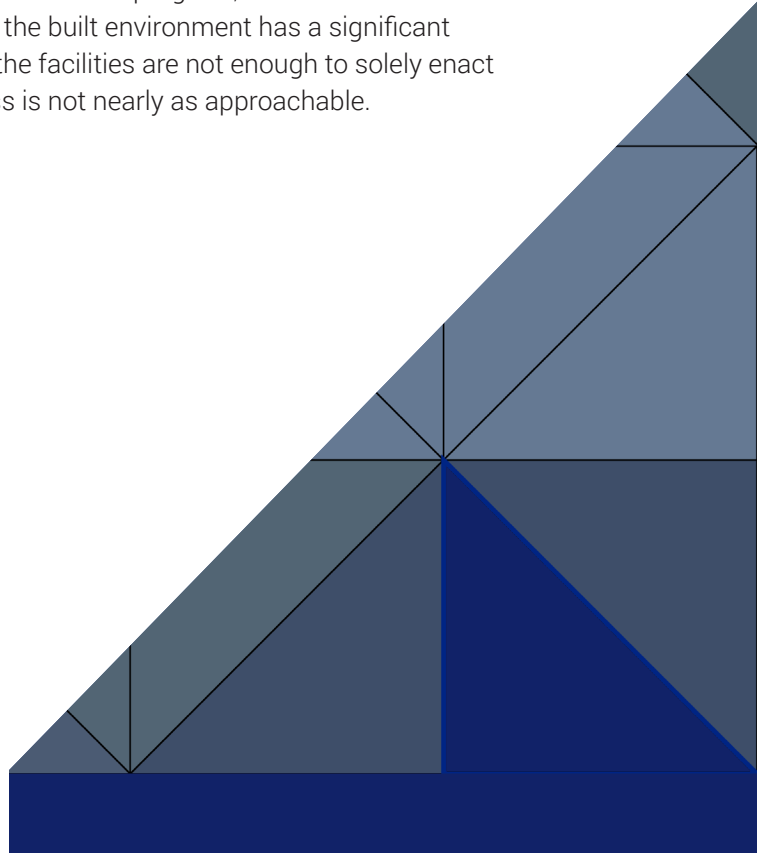
- Facility and Mobile Equipment Maintenance
- Logistics Planning and Management Services
- Transportation Systems/ Infrastructure Planning, Management and Regulation
- Warehouse and Distribution Center Operations

CONCLUSION

The material presented works to expose several ideas likely already known, but seldom recorded. The individuals who live, teach, and learn from these featured programs are the key influencers in sharing a significant portion of their day for the betterment of the future of such a trade or industry. By collecting the specific needs and wants of CTE-centered programs into one document, the many ways in which these programs work together is harnessed and articulated. Each spread works to communicate where different program efficiencies, pedestrian activation, and community engagement opportunities exist so they can be leveraged for tangible benefit by all.

As Sabin Schellenberg Professional Technical Center Principal Karen Phillips noted, we also believe in learning environments where teaching takes place both outside and inside the intended space, where space is flexible enough to take on the needs of the day as curricula navigate changing horizons, and where spaces and programs cross-educate for a comprehensive approach to technical education. We believe in a learning environment that works on all levels including the home and neighborhood, as well as the school.

The schools we build are just one piece in creating student success. However, if we have succeeded in telling the vision of NCSD's CTE program, then we will have communicated our fundamental belief that the built environment has a significant effect on the way students learn. So, while the facilities are not enough to solely enact social change, without them, social progress is not nearly as approachable.



REFERENCES

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- » as contributed to by: Aerospace Joint Apprenticeship Committee (AJAC), American Society of metals (ASM), The Boeing Company, National STEM Consortium (NSC), Skill's Inc., Washington Manufacturing Advanced Training Institute (WMATI).

U.S. DEPARTMENT OF TRANSPORTATION ADVISORY CIRCULAR

- » as composed by the U.S. Department of Transportation Federal Aviation Administration

CHERRY CREEK SCHOOL DISTRICT (CCSD) CAREER & INNOVATION ACADEMY

- » Space Program Verification as prepared by DLR Group.

WEST MEC - AVIATION PROGRAM

- » Aviation Space Program as prepared by DLR Group.

AGRICULTURE, FOOD & NATURAL RESOURCES CAREER CLUSTER

- » cte.careertech.org Common Career Technical Core listing

PHOTO REFERENCES

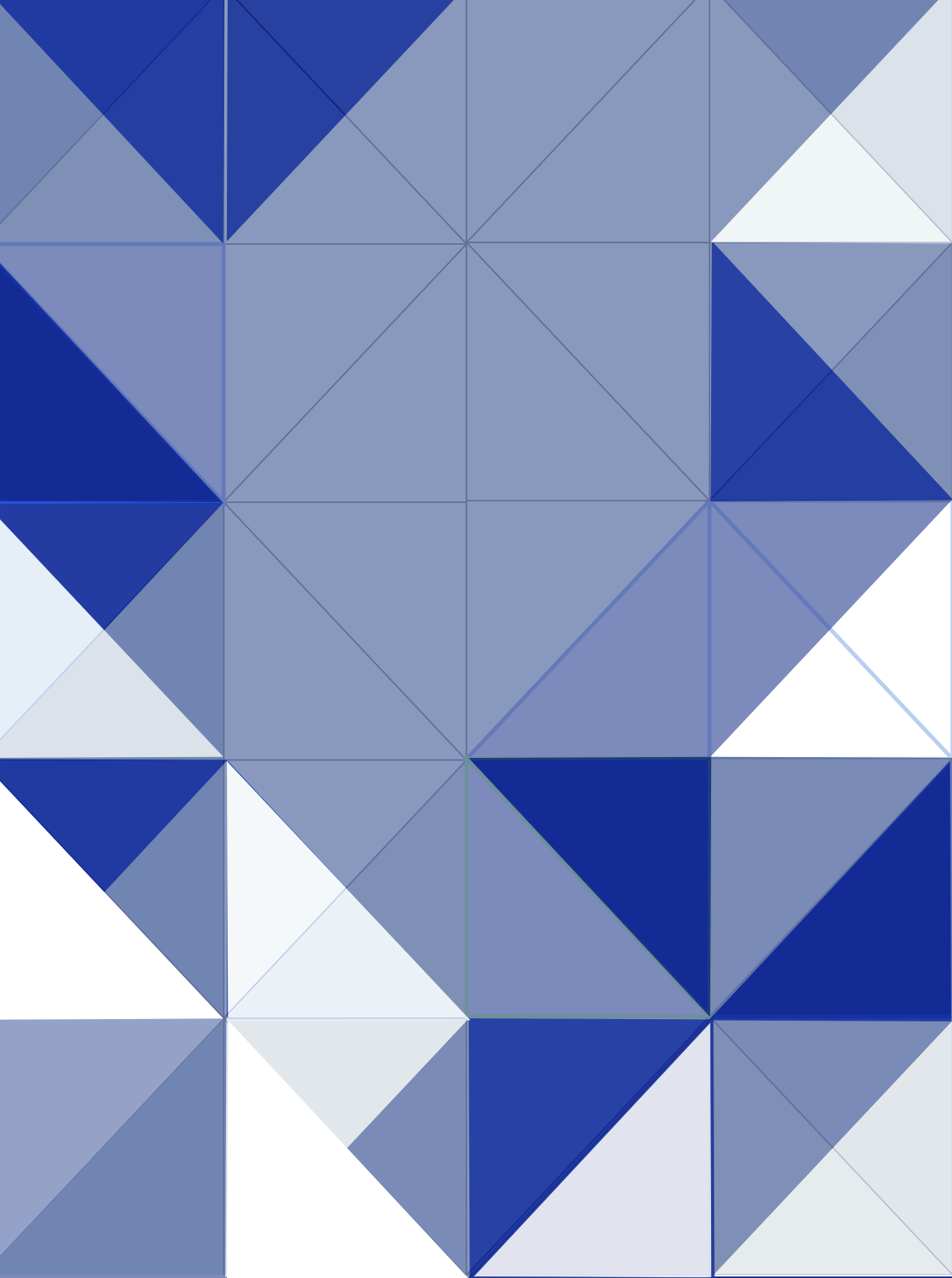
- » All tour, trade, and site observation photos are by Michael Fletcher, Todd Ferking, and Larry McManus unless noted otherwise.

ICONOGRAPHY

- » All iconography by the Noun Project authors: MRFA, Korokoro, Rashida Luqman Kheriwala, Meaghan Hendricks, TS Graphics, H Alberto Gongora, Symbolon, iconshere, Linseed Studio, Aneeque Ahmed, Adnen Kadri, Daniela Baptista, Gergor Cresnar, Maxim Basinski, Hea Poh Lin, Made by Made, Alena Artemova, Creative Stall, Genius Icons, Made, Setyo Ari Wibowo, asianson.design, Anil, Ramesha, Shastry, Bestdesignmarket, Dinosoft Labs, Atif Arshad, and Popular.

SKETCHES

- » All sketches by DLR Group as composed during Focus Group documentation unless noted otherwise.



Prepared by:

