

Newton Middle School

Littleton Public Schools

2022 LEawards, Planning and Design Awards



Executive Summary

Newton Middle School was funded by the 2018 Littleton Public Schools Bond program as the flagship project. The project is a replacement middle school to serve an existing student population on the existing site, and the project goals were driven by the District's bond legacy statement focusing on delivering high quality educational spaces. In addition to the middle school program, the school also separately houses the district's NOVA program for Social Emotional Special needs.

The new two-story Newton Middle School in Littleton Public Schools clusters around a protected courtyard, programmed with various outdoor spaces to support the school's robust educational offerings. A large Amphitheater benches the grades in this area to connect the two levels of the school and provide equal access for all students. The STEAM suite and Media Center share ample patio space for project-based learning and cross-collaboration among students. Each classroom wing accommodates a single grade level. Instruction for each grade level is broken down into two teams, with each team having four classrooms and a science classroom. There are combined Flex Breakout spaces that can be configured to support the team or the entire grade. It also features a Learning Stair and Cafetorium combination. It is the "heart" of the school, as it is where all the main circulation paths intersect and acts as the hub or entrance space for the Library, Music Room, Art Room, STEAM rooms, the kitchen serving area, and the Gymnasium. This high-volume multi-purpose space provides the flexibility to act as cafeteria, an auditorium, a group classroom, and lecture hall and provides direct access to outdoor dining, classrooms, and specials. It also features athletic facilities rarely found in a middle school including an indoor rock-climbing gym, a full fitness center, four basketball courts, an indoor running track and outdoor play structures and sports courts.

Scope of Work and Budget

Owner	Location	Project Type	Grades Housed	Occupancy Date	Student Capacity	Size	Cost
Littleton Public Schools	Littleton, CO	Middle School	6-8	August 2021	850 students	Site Size: 160,000 SF Gross Area: 163,369 SF Area per Pupil: 192 SF/student (gross)	Construction Cost: \$59,500,000 Cost Per SF \$371.88/SF

School & Community Engagement

Challenges, Assets, and Value to the Community

In 1962, the Isaac Newton Middle School opened its doors at Nobles Road (now Arapahoe Road) and Colorado Boulevard. Although renovated over the decades, the facility was aging and faced significant ADA issues. As part of the 2018 Bond Program, Littleton Public Schools (LPS) identified the need to build a new middle school facility on the current Newton Middle School campus. The Newton Middle School site was also a desired location to build a District Junior Stadium as part of the bond program. This stadium was to accommodate community sporting events and increasing District sporting events such as track, lacrosse, and soccer, alleviating scheduling difficulties with other district facilities. Site zoning to lessen the impact to residential neighborhoods to the north and the east of the activity, lighting, and noises associated with a stadium and site zoning to allow the middle school to function separately from the stadium activities were significant challenges.

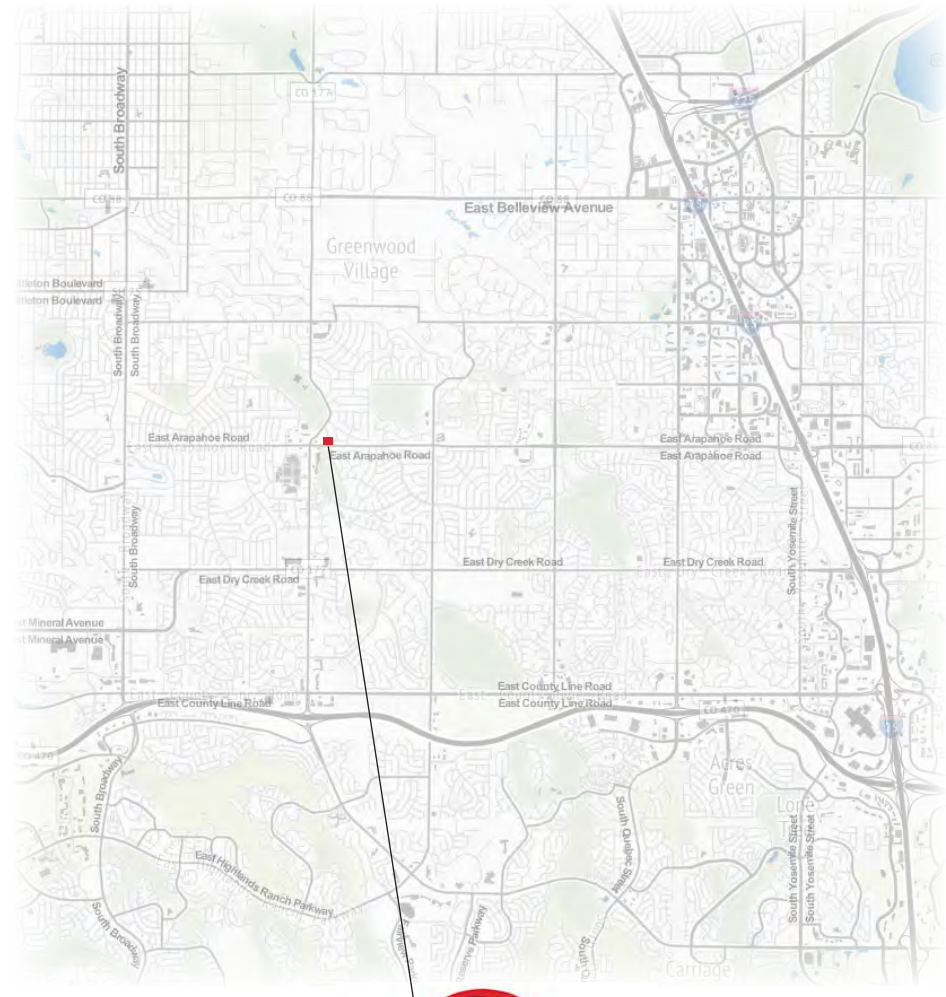
The District retained an Architect to bring this flagship project of the bond program to life. The Architect worked closely with the District and Owner's Representative to fully define the vision and goals of the project. Classrooms became flexible team-based spaces that are also conducive to various learning modalities such as independent study and small and large group collaboration. Ultimately, classrooms employ different modalities in one flexible learning environment. Increased opportunities for PE and athletics and space for the District's NOVA program – a district-wide program that provides support to students K-12 with social and/or emotional needs – were also top priorities of the project.

Stakeholder Engagement

In a fully collaborative Design Advisory Group (DAG) process, the District's already-established project vision, goals, and site analysis were studied and refined. The DAG was comprised of 27 members, including Newton Middle School administration and staff, parents, students, the Owner's Representative, local community members, the design team, the CM/GC, and District leadership. Due to the District's focus on safety and security, local first responders also participated in the DAG process to provide input on crisis response. The Architect held six meetings with the DAG to formulate the design with specific goals for each meeting. At the first meeting, the Architects ensured that all participants understood the "big picture" and agreed on specific goals for the project. The Architect also led tours of other new Colorado middle schools as a part of the DAG process.

Community Environment

A strong and vital sense of community exists at Newton Middle School. The District considered re-branding the new school, but the original Knight mascot and Newton Middle School name were kept due to the strong connection with the school's culture and history. One example is the long tradition of "Knight Time" where the final session of the day is dedicated to teachers checking in with a small group of students on a variety of topics, from grades to mental health.



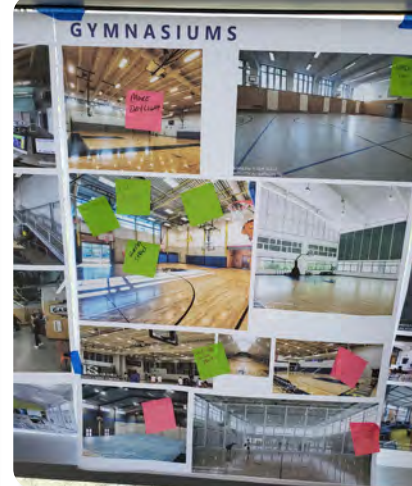
School & Community Engagement

Communication and Goal Alignment

The Architect developed several site and classroom design options for the District and DAG to consider. Every design decision was made by evaluating how each option met the project goals and supported the District's overall vision for the new Middle School and Junior Stadium. To ensure the final environment aligned with the vision and goals set during the planning process, the Architects used 3D visualization of the space to communicate design decisions with the DAG and staff user groups.

During construction, an Architectural team member with the specific role of Quality Assurance / Quality Control (QA/QC) was periodically on site at key milestones to review the design standards with the CM/GC. Additionally, the Architect's Construction Administrator visited the site on a weekly basis and attended weekly Owner/Architect/Contractor (OAC) meetings. The CM/GC held site tours, had a live construction camera on site, and flew a drone on a weekly basis that the District posted to its website so that everyone could be kept updated on the progress of construction.

Project Visioning



Educational Environment Design

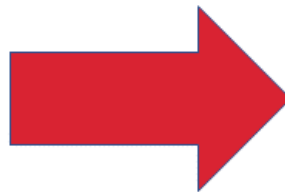
Project Goals

Aurora Public Schools' Bond Legacy Statement resulted in the following goals for the new Newton Middle School:



Aurora Public Schools Bond Legacy Statement

- By integrating indoor and outdoor space and departing from the standard cafeteria, provide a multi-use café offering students a warm and inviting space that promotes interaction.
- Provide an open and accessible space that balances collaborative learning with the importance of silent sanctuaries all while supporting new technologies and classroom instruction.
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- Utilize technology to promote collaboration, creativity, critical thinking and enhance the personalized, human experience by removing barriers and supporting accessibility.
- Provide a safe and collaborative environment where students are encouraged to engage in creative and stimulating thought processes while supporting student ownership of learning and inspiring authentic experiences.
- Building design that eliminates the standard institutional aesthetic in favor of welcoming and flexible spaces which not only provide comfort and functionality but promote safety and security by utilizing user friendly wayfinding within a well-lit environment.
- Utilizing all spaces for the learning of small and large groups with passive supervision, space for teacher collaboration, and adequate storage.



1. Build a new Middle School for the district on the current Newton Middle School campus

- Replace the failing structure of the existing school, solve current ADA issues, and provide extensive daylighting and added security;
- Provide space, a dedicated entrance, and a separate playground for the LPS NOVA program to serve K-12 students with social and emotional needs, acting as a "school within a school";
- Provide space for professional development for LPS teachers;
- Provide the appropriate-space for small and large group instruction, creativity and innovation, and outdoor learning opportunities;
- Utilize technology to promote collaboration, creativity, critical thinking and enhance the personalized, human experience by removing barriers and supporting accessibility.
- Include increased Physical Education (PE) opportunities for students with playing fields, play structures, and parking that serves the neighborhood; and
- Phased construction to allow the existing school to safely remain in use.

2. Build a new District Junior Stadium on the current Newton Middle School campus

- Provide a lighted field and track with spectator seating for school, District, and community sports teams to use, with site design keeping the stadium away from the residential neighborhoods to the north and east and zoning that keeps it separate from the Middle School while allowing for shared parking; and
- Provide accessory buildings (restrooms, press box, concession stand, ticket booth) and a new sound system and scoreboard.

Educational Environment Design

Supporting Varied Learning and Teaching Styles

Littleton Public Schools' NOVA program is located at Newton Middle School and provides a non-traditional instructional setting for students with emotional disabilities from grades Kindergarten through the 12th grade. This program is located on the west side of the building with its own entrance and separated from the rest of the middle school facility. The program includes classroom spaces for academic instruction and to accommodate the BEST Program for students with autism. Classrooms are arranged and configured to enhance and support instruction and create a productive and positive learning environment. A playground is provided for the younger students, and a connection to the middle school Physical Education (PE) facilities is provided for the older students.

Health and physical activity are prevalent themes in the new school. PE is also offered every semester, which is uncommon in most Colorado middle schools. The new Newton Middle School also features athletic facilities rarely found in a middle school including an indoor rock-climbing gym, a full fitness center, four basketball courts, and an indoor running track.

The new Newton Middle School provides multiple connections to outdoors as well. Outdoor learning spaces are found at each of the learning pods and at the STEAM area, directly adjacent to the interior flex breakout and STEAM spaces with large openings to allow projects to be moved outdoors. Garage doors also open the gymnasium to the outdoors to play structures and play fields that feature synthetic turf for low-maintenance year-round use.

It's been long recognized that time outdoors improves student classroom performance, and this concept was integral to the design concept. The outdoor play and dining spaces are provided in secured areas that for students to eat at outdoor tables. Outdoor play is encouraged activity through age-appropriate play structures and sports courts. The outdoor learning courtyard provides a sloped amphitheater that allows teachers to take their students outdoors for additional learning opportunities. Boardwalks leading from the north to south edge of the detention pond allow for an ecological curriculum to be studied in the field.

Flexibility and Adaptability

An improved learning experience that could adapt to future changes was also a critical element that was addressed in the design of the school. As the education program evolves, each learning pod can flex over time. Spaces of appropriate size were designed that can easily adapt to new uses and provide infrastructure to support current programs and anticipate future programs. Flexible furnishings also allow the spaces to be customized as changes in the curriculum occur.

This flexibility in design is shown by several examples. First, the new Newton Trail Middle School features a Learning Stair and Cafetorium combination. It is the "heart" of the school, as it is where all the main circulation paths intersect and acts as the hub or entrance space for the

Library, Music Room, Art Room, STEAM rooms, the kitchen serving area, and the Gymnasium. This high-volume multi-purpose space provides the flexibility to act as cafeteria, an auditorium space for performances, and for group learning and guest lecturers. Robust technology allows for multi-media presentations and internet accessibility to enable greater learning opportunities. Clubs and teams also use the stairs as a meeting space, and students frequently use the stairs as small-group huddle space or to connect with friends during lunch.

Another example is the Professional Development room, which was designed for District professional development training. Designed to accommodate 100 staff at a time, it can also be divided into smaller spaces as needed. It is so popular, that it is reserved five days a week.



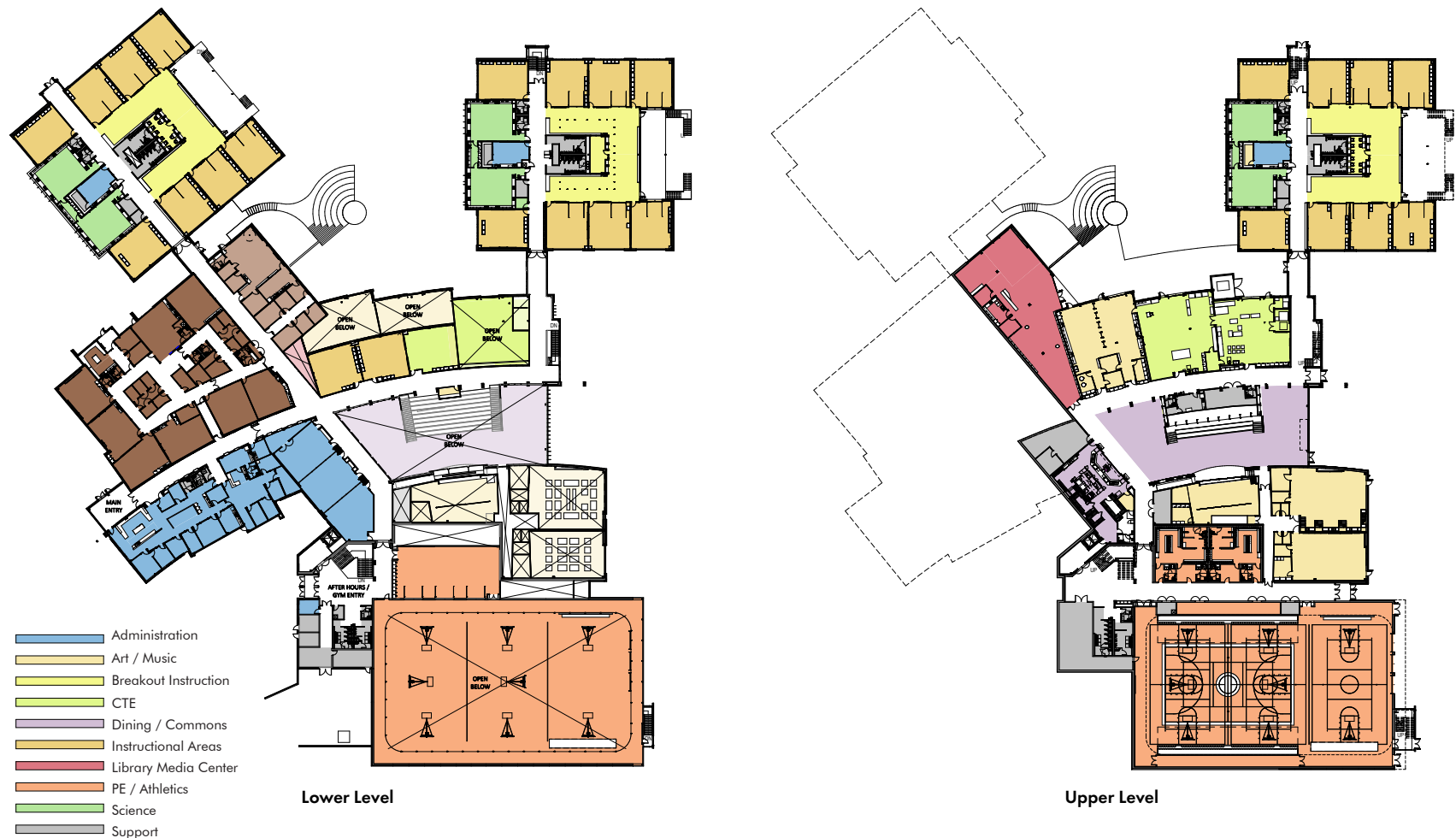
Educational Environment Design

Supporting the Curriculum

Each classroom wing accommodates a single grade level. Instruction for each grade level is broken down into two teams, with each team having four classrooms and a science classroom. There are combined Flex Breakout spaces that can be configured to support the team or the entire grade. The classrooms feature overhead doors that allow the individual classrooms to be opened up to the flex space. Individual classrooms are designed as flexible learning environments capable of supporting multiple modes of teaching, learning and educational activities and feature flexible furnishings.

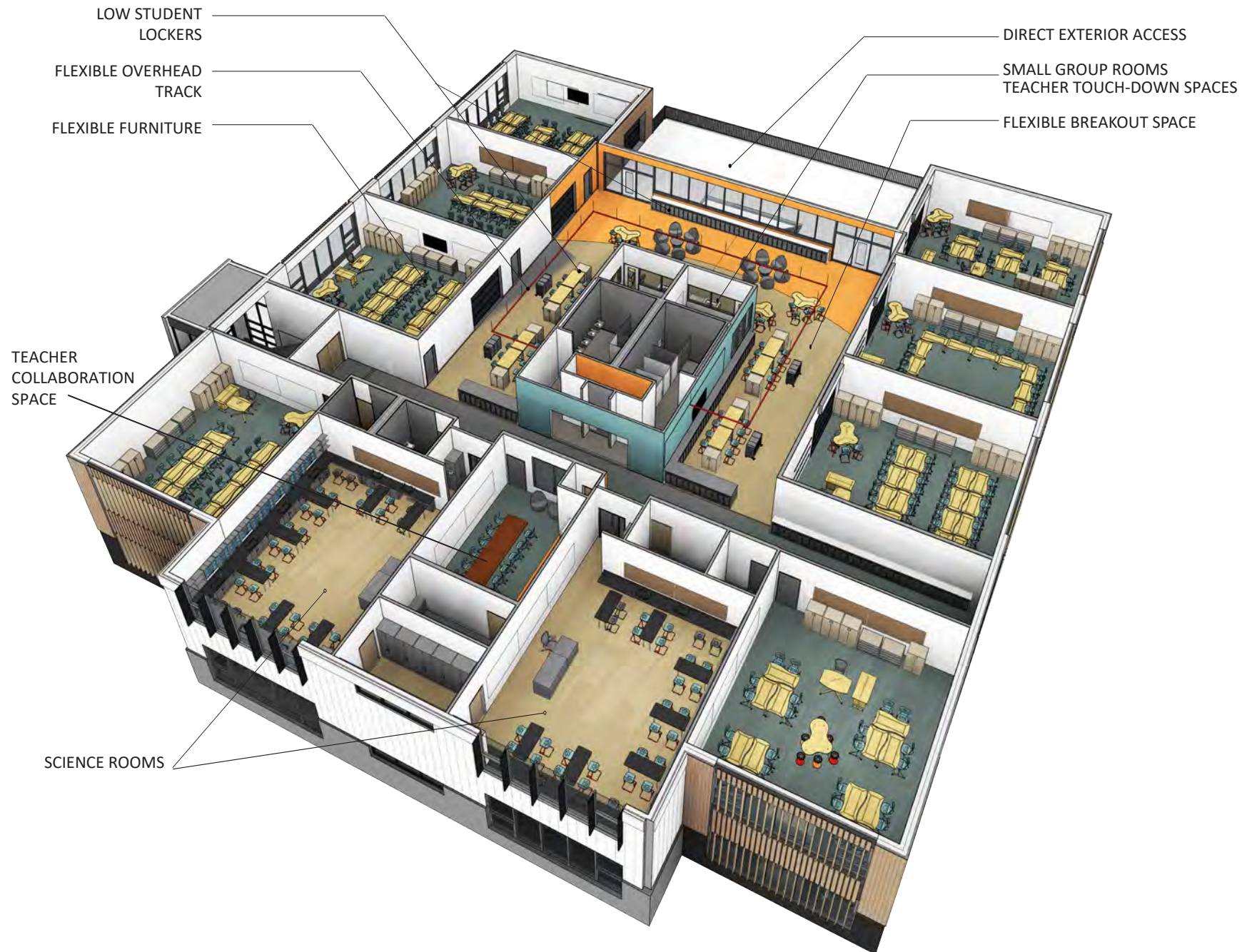
Newton Middle School has a state-recognized STEAM education program, and the design took into consideration that the STEAM spaces including Art, STEAM Labs, and Wood Shop needed to be state-of-the-art. They are located directly off the main circulation path and the Cafetorium, making them very visible within the school for students passing by and to showcase STEAM project and learning activity within the school. They also have access to outdoor spaces that support moving projects outdoors on good-weather days.

Floor Plans



Educational Environment Design

Typical Classroom Pod



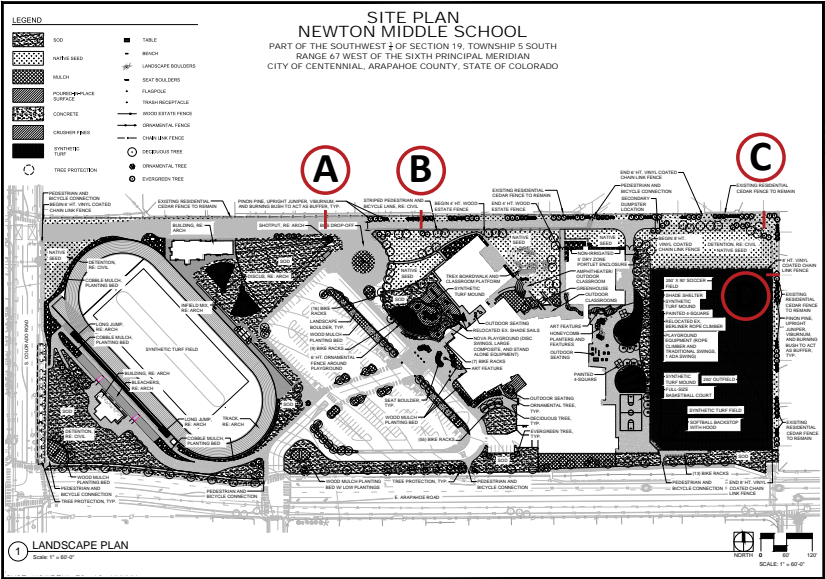
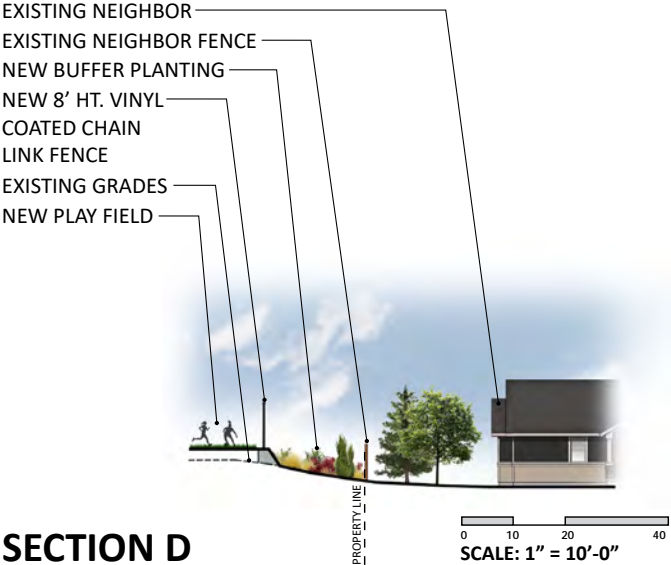
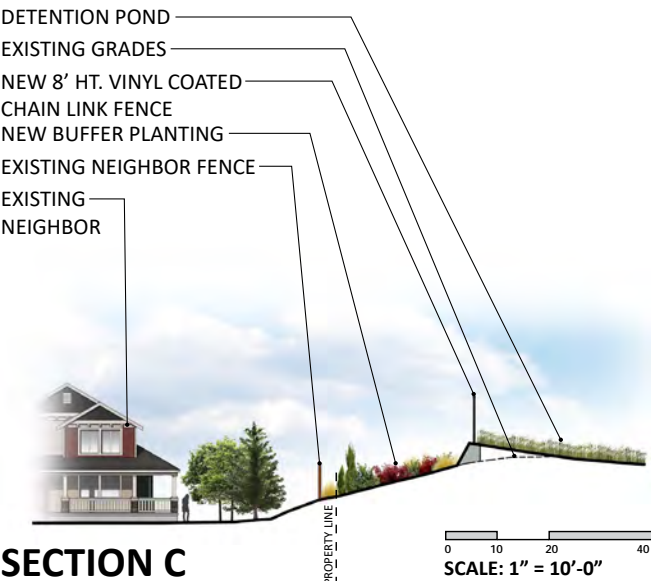
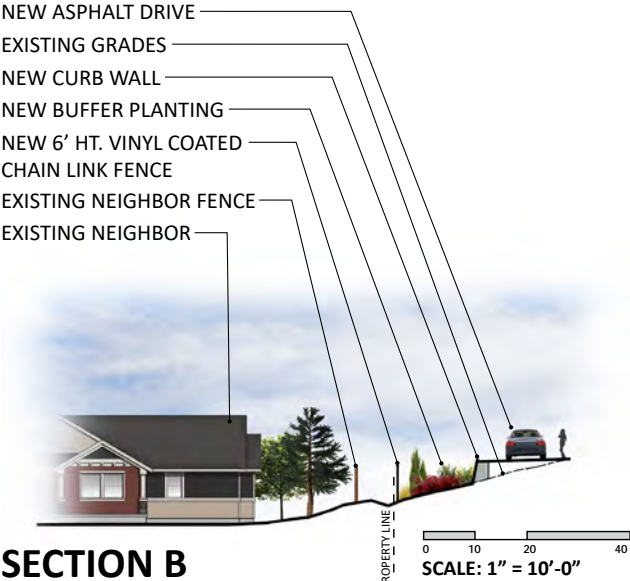
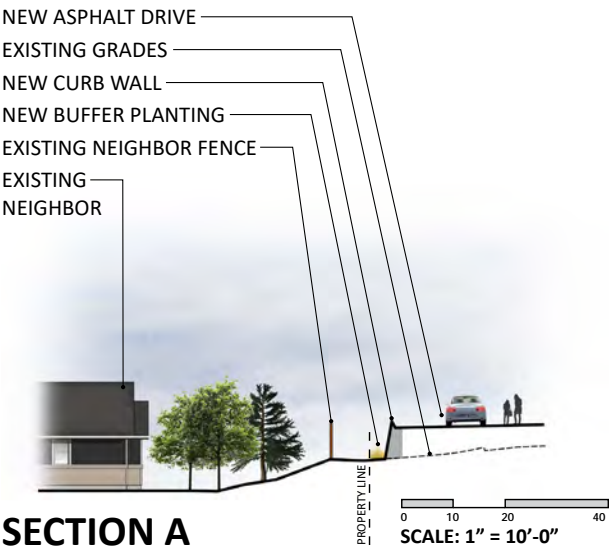


(Above) Newton Middle School has a state-recognized STEAM education program, and the design took into consideration that the STEAM spaces including Art, STEAM Labs, and Wood Shop needed to be state-of-the-art. (Below) Flexible 21st Century education spaces were a goal of the design, and classrooms and breakout spaces feature varying types of seating to accommodate different exploratory learning settings, extensive daylighting, robust technology, and connections to the outdoors.



Educational Environment Design

Responding to Neighborhood Needs



Physical Environment

Inspires and Motivates

The exterior building design concept is based on a modern aesthetic with clean lines, strong forms, and simple integration of color and material. This concept responds to the neighborhood context, has recognition as a school facility, but is also innovative and forward thinking in its aesthetic. A mix of modern metal panels paired with the traditional familiar brick material creates a dichotomy of innovative yet familiar sensibilities that drive the design. Warm materials such as wood panels are integrated as accents to counter the metal panel and brick materials.

A strong building form is proposed at the entry that carries through the building to the other side creating an identifiable circulation path that organizes the building. This form will be visible from the exterior through the interior creating a strong inside outside relationship.

The interior design always had the student front-of-mind. The identification of neighborhoods continues in from the exterior to the interior with the use of materials and color. Each pod has a unique color scheme and furniture layout that was selected to encourage learning and creativity. A “sprinkle” of red was introduced throughout the building to unify all areas. Red is used in greater amounts in the shared and central areas of the school to further support the pride of the school’s mascot and colors. At the heart of the school, a feature wall of a stylized knight, the school mascot, adorns the cafetorium and overlooks the students as they participate in activities on the learning stair, eat lunch, or travel to other parts of the building.

Student creativity is supported with many display cases throughout the shared areas including an interchangeable panel system that will allow the art teacher to manage a school-wide art project that can be changed or added to over time. These panels also provide a place to post student work. Taking advantage of space on stairwells, seating nooks are provided to the student that may want to work in a smaller group or by themselves. The result combination of materials, colors and features create an environment where the student is central to the space and feels comfortable and are energized in their school.

Site Plan and Community Context

The selected design is simply organized based on its location on the site, the site’s topography, and the layout of other site elements. The proposed building is a walk-out configuration with the main entry at the upper level. From the entry, a simple circulation path is planned that leads directly to the center of the school and the open Cafetorium Space. The building is clearly zoned with classroom wings located to the north, and the gymnasium and activities located to the south. The cafetorium space has direct access to outdoor dining and student spaces.

The DAG took into consideration the placement of the Junior Stadium as well while the site was being studied. The group agreed that the Junior Stadium should be located at the corner of Arapahoe Road and Colorado Avenue to take the activity, lighting, and noises associated

with a stadium away from the residential neighborhoods to the north and the east. The design site scheme was chosen by the Design Advisory Group based on the stadium location and site zoning that allowed the middle school to function separately from the stadium activities. These site zoning strategies included placing the shared parking area between the stadium and the middle school building. The middle school outdoor spaces including outdoor dining, hardscape courts and grass play fields are kept separate and located to the east of the school building. This gives the middle school facility a feeling of autonomy and separation from the stadium facility.

Fosters Community Use

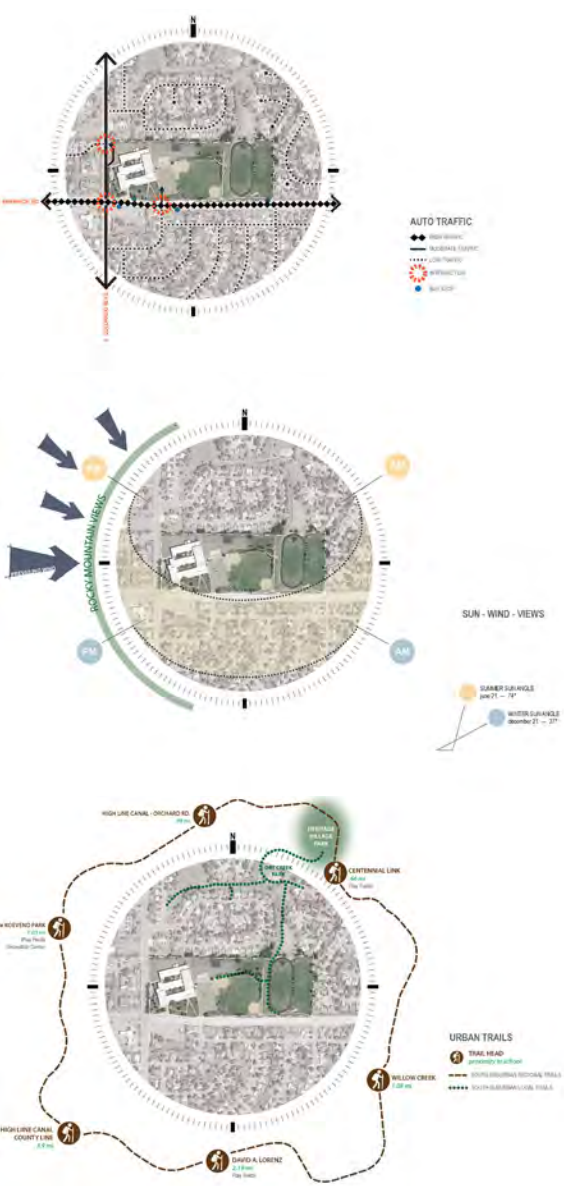
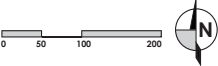
The local neighborhoods consider the school to be a community space, and the Architect took advantage of this spirit of pride to create a school that would be viewed as a significant asset. The compartmentalization and zoning of the building not only allows for events to be isolated, but also facilitates after-hours use by allowing the classroom portions of the building to be secured from the public areas. Key building features such as the learning stair promote community use for group presentations both for students and other groups alike. A small outdoor courtyard that serves the administration and professional development area also functions as an entry courtyard for the after-hours gymnasium entrance.

The Middle School’s athletic fields and play structures were designed for year-round community use. In addition, the District has an agreement with South Suburban Recreation District in the community to use the new Junior Stadium year-round for numerous youth sports leagues. The new Newton Middle School will continue as an important community asset for decades to come.



Physical Environment

Site Plan



Sustainability and Wellness

Energy Efficiency

Thoughtful consideration was given to the placement of the large school building within the site to reinforce a direct visual and physical connection with the outdoors. Several daylight analyses resulted in the integration of large glazing areas, translucent glazing panels, and dimmable skylights to balance the natural light across classrooms, student collaboration spaces, and the large cafetorium and gymnasium. In addition, the large window wall in the classrooms incorporated several operable units that provide the opportunity for direct natural ventilation to improve student performance and cognitive function. The classroom windows also take advantage of vertical or horizontal louvers to optimize natural light and reduce glare depending on orientation.

The goal established for the MEP building systems for the Newton Middle School included providing a safe and reliable facility that meets the requirements of the users along with meeting the needs of project budget, energy conservation, and building maintenance. The design team also worked closely with a third-party energy modeler to assist with responsible selections for the mechanical systems that would work in tandem with the thermal building envelope to reduce energy use and overall operational costs. Multiple mechanical system types were studied and reviewed with the District during the design process to ensure that systems met the established goals. The mechanical system utilizes high-efficiency hydronic rooftop units with hydronic heat and DX cooling. The air distribution system is a multi-zone variable air-volume VAV system with hot water reheat and includes overhead distribution with low in-wall return grilles. This is an energy reduction strategy that allows for a reduced minimum outside air volume during times of peak cooling. The low return also enhances the indoor air quality by providing better mixing of air at the level of the students.

Lighting systems include LED luminaires that utilize 4000° K color temperature with minimum 80 CRI (color rendering index). LED fixtures are equipped with dimming electronic drivers and in some locations include full color tuning for special room functions and affects. Fixtures were chosen based on photometric analysis for the space to address optical performance, quantity, and efficacy of fixtures. A building envelope commissioner was also involved to ensure the construction methodologies aligned with best practices to mitigate undesired air and water infiltration that could inhibit the mechanical system's performance.

Landscape Design

The two-story school clusters around a protected courtyard, programmed with various outdoor spaces to support the school's robust educational offerings. A large Amphitheatre benches the grades in this area to connect the two levels of the school and provide equal access for all students. The STEAM suite and Media Center share ample patio space for project-based

learning and cross-collaboration among students. The landscape design for this area was inspired by the local Colorado landscape and is planted with native grasses to minimize the amount of irrigation and maximize the opportunities for outdoor education. A nature trail meanders through the courtyard and incorporates an interactive water feature to capture runoff from the adjacent building roof and teach students the importance of resource management and hydrology. There is also a large, central greenhouse in the courtyard for students to garden, grow their own food, and learn healthy life skills. Play structures and play fields feature synthetic turf for low-maintenance year-round use.

Safety and Security

Safety and security are a significant focus for Littleton Public Schools. A first-responder participated in the Newton Middle School DAG process and helped the design team understand how first-responders would arrive and move about the school in the event of an emergency. While a critical component, the District and the DAG wanted the safety and security features of the school to be non-threatening and welcoming. For example, the entry vestibule features bulletproof glass, so it is secure yet open and bright. Floor patterns in the carpet indicate where students should stand in the event of an active-shooter situation to stay out of sight lines, yet these patterns simply appear decorative in nature.



One of the central features of the new middle school is the outdoor learning courtyard with a sloped amphitheater that allows teachers to take their students outdoors for additional learning opportunities. The learning courtyard connects the two levels of the school and provides equal access for all students.



An increased focus on health and physical activity is prevalent in the new Newton Middle School. Athletic facilities rarely found in a middle school are key features including an indoor rock-climbing gym, a full fitness center, four basketball courts, and an indoor running track. Play structures and play fields feature synthetic turf for low-maintenance year-round use.



Results of the Process and Project

Replacing the aging existing school, the new Newton Middle School now houses the District's NOVA program, a non-traditional instructional setting for K-12 students with emotional disabilities. This "school within a school" is located on the west side of the building with its own entrance and separated from the rest of the middle school facility.

The design of Newton Middle School has also been very successful in creating educational classroom clusters that accommodate different modes of learning. The classrooms easily open up to support team based project work, group collaboration, and individual focus areas. The school was truly designed for student learning by providing a flexible framework that can adapt to needs as they change. Newton Middle School was also successful in connecting students to outdoor learning at the classroom level by using the activity patios adjacent to each classroom pod and through the outdoor learning amphitheater.

Newton Middle school has been very successful in creating opportunities for all students to participate in physical activities. With an emphasis on movement and participation, Newton Middle School provides engaging opportunities for all students to build healthy, life-long habits.



"The Newton Middle School replacement project is the flagship project for the LPS 2018 Bond Program and is LPS' first replacement school in several decades. Though every adverse circumstance (and there were many, in the midst of a global pandemic), the (design) team rose to the occasion and delivered. For that reason, I wish to extend my heartfelt thanks to (the architect) for their inspired design and outstanding performance on this project."

- Owner's Representative for Littleton Public Schools

