

TO: Board of Education
FROM: Tim Miller
RE: Science Facility Task Committee
DATE: March 31, 2009

Per the request of WDMCSD Board of Education and the Facility Improvement Master Plan for WDMCSD (Bussard, 1-26-09), a small group of parents, teachers and administrators came together to form the Science Facility Task Committee. This committee met in February and March, 2009 to discuss issues, concerns and needs regarding facility improvements in the science classrooms of WDM Schools.

Members of this committee did an on-site visual audit of the science education facilities at Valley High School. The items of concern regarding VHS science labs listed in this document were verified and confirmed during this on-site tour. Members of this committee commented that actually seeing the items of concern first hand was an "eye opener" for them. There are real and significant safety and facility needs existing in the science facilities at VHS. The committee's observations and recommendations are based on the foundational themes of safety, fulfilling ADA requirements, and providing an educational environment conducive to quality science education. Not only should science facility upgrades be completed to be commensurate with other educational facilities in the district, but also to provide the best possible experiences for our students to go anywhere in the globe to compete in the applications of science and technology.

Science Facility Task Committee Members

Kris Saggau	Parent
Laura Porter	Parent
Ruth Henderson	Teacher- ST
Scott Moore	Teacher-VHS
Karla Snodgrass	Teacher-WH
Aiddy Phomvisay	Administrator-VHS
Graham Jones	Administrator-JC/WR
Dave Blum	Administrator-LRC
Tim Miller	Administrator-ST

Meeting Dates

February 16, 2009
March 2, 2009
March 26, 2009

Four Areas

This document lists and details four areas to be addressed in the district's overall 20 year facility planning. The following addresses these four areas (K-6, 7-8, VSW & VHS) regarding science education facilities in WDM Schools. Three committee recommendations appear at the end of this document.

Area 1: Valley High School

The committee recognizes the need for VHS to perform a self-audit, using the *"Building for Safety in Secondary School Science Facilities: An Audit"* from the resource entitled *NSTA Guide to Planning School Science Facilities*, 2nd edition. NSTA Press. 2007. This self audit would assist the building in identifying any issues or needs regarding their science facilities. These issues and needs should then be folded into the district's facility planning decisions. In addition, this self-audit should be completed on an annual basis to maintain safety and optimal science teaching and learning.

Listed below are concerns and issues regarding the science facilities at Valley High School.

- During the last major remodeling phase at Valley High School, the science classrooms were minimally impacted. Installation of a sprinkler system is the only major upgrade in these classrooms. These classrooms continue to need major improvements.
- Many of the science classrooms at Valley continue to have significant plumbing issues, with many drains slow at best and stopped at worst. Rooms 332 and 335 have open drains at the end of the lab islands. This means that there is an open hole in the floor that waste water drains (falls) into, sometimes flooding the floor.
- At the end of breaks (summer, winter and spring), water from faucets is often discolored (orange) due to deteriorating pipes in several classrooms. Piping is galvanized lead.
- Low water pressure in most rooms is a constant challenge.
- Most rooms do not have hot water.
- Evidently, some drain traps are not functional. From time to time, depending on how much water is being used in the science classrooms, several rooms have a "sewage smell" that lasts for multiple days.
- All science classrooms have ADA uses. There are no lab stations designed for wheel chair bound students. Eye wash stations for wheel chair bound students are non-existent. Many second exit doors from classrooms are blocked or enter into chemical storage rooms before accessing the hallway.
- Gas lines in the tunnels have also leaked.
- Some gas shut off valves do not function properly. Several rooms have a "gas smell" issue from time to time.
- In years past, pipes that service the science classrooms in the tunnels have burst.
- Many science classrooms do not have Ground Fault Circuit Interrupters (GFI).
- Several rooms have electrical circuits that cannot service the load that is put on them, thus circuits are blown. For example, rooms cannot run more than 1-2 hot plates at a time, without blowing a fuse. Circuits do not meet city building codes, even after the remodel in the older science rooms.
- Some classrooms have gas and water lines above the working lab tables which makes it difficult for staff members to keep an eye on what is taking place during laboratory instruction.
- Room temperatures are inconsistent. Temperatures in the 50's occur in some rooms in the winter.
- Fume hood hoods are marginally functional. The fume hood in room 335 collects snow and leaves each year. Room 303 (part time chemistry room) does not have a fume hood at all.
- Room ventilation in several rooms is ineffective, unless the doors are propped open to provide exchange air to the rooms.
- Chemical storage capability seems to be OK, except outside venting is needed for the acid storage closet, thus not meeting acceptable safety standards. There is no fume hood in the storage area to mix and prepare chemicals for class.
- Storage is becoming an issue, as cupboards and counters are in need of repair or replacement. Some sliding cupboard doors have fallen out of their track, some hinges and handles to doors and drawers are missing.

- Room 304 is now established as a science classroom, but has no sinks, no water, no gas outlet access in the room, and has minimal electrical access, with only a few outlets scattered in the room.
- Several rooms have chemical resistant counter tops that are deteriorating. The teacher counter top in room 331 is deteriorating and is actually made out of some kind of pressed particle board rather than a chemical resistant surface.
- Many science investigations are requiring the use of technology for data collection (ie- probes) and for tabular and graphic analysis, which require lap top computers. Limited computer access for these science labs restricts science exploration, inquiry and information research. There is minimal computer access in the science classrooms. Additionally, the few computers used in the science rooms are machines that have been pulled from regular use in the building because they are too old.
- A comment made from several committee members: "Walking into these science classrooms from other parts of the building is like walking into another world, due to the significantly poor science facility issues."

The science teachers, operations staff and custodial staff have worked as well as could be expected in trying to keep these science rooms functional. Many of the same issues occur every year, month after month, only to be addressed in the same short-term, band aid solution. The staff continues to "cope" with these issues and "make the best of it," but by doing so, may be compromising health and safety for themselves and students. In addition, challenging science facilities creates significant hardship for our science teachers and students regarding teaching and learning.

One could say that Valley High School has just completed a huge, expensive remodeling phase, so it should be "good" for a few years. This committee does not agree with that statement. Our science classrooms are in dire need of improvements. With the emphasis of inquiry science in the Iowa Core Curriculum and the focus of STEM for our students, Valley High School needs a quality science education facility to provide the best possible science experiences for our students. WDM Schools always takes pride in providing the best possible facilities for its students and community. Let us step up to the plate and re-create a science education environment at Valley High School which highlights safety, health and facilities for quality science teaching and learning.

Area 2: Valley Southwoods

The committee recognizes that VSW should perform a self-audit, using the "*Building for Safety in Secondary School Science Facilities: An Audit*" from the resource entitled *NSTA Guide to Planning School Science Facilities*, 2nd edition. NSTA Press. 2007. This self audit would assist the building in identifying any issues or needs regarding its science facilities. These issues and needs should then be folded into the district's facility planning decisions. Additionally, this audit should be completed on an annual basis to maintain safety and optimal science teaching and learning.

Listed below are concerns as identified by current science teachers at Valley Southwoods.

- 150 F (Green Down) Temperature control seems to be a problem
Door to outside does not seal properly, leaks cold/warm air
- 160 B (Red Down) Backroom drain has foul odors
Safety shower/eye wash has not been serviced
Eye wash is partially clogged
- 170 C (Blue Down) The drain under the shower often overflows (1-2 times/year)
The sink in the back storage room has an unpleasant odor if not used frequently
The ventilation and heat are both subpar in the room

- 250 F (Green Up) 85% Shower/Eye station flows into the drain and 15% onto the floor
- 270 C (Blue Up) No problems

Area 3: 7-8 Science (Indian Hills and Stilwell Junior Highs)

The committee recognizes that both buildings perform a self-audit, using the “*Building for Safety in Secondary School Science Facilities: An Audit*” from the resource entitled *NSTA Guide to Planning School Science Facilities*, 2nd edition. NSTA Press. 2007. This self audit would assist both buildings in identifying any issues or needs regarding their science facilities. These issues and needs should then be folded into the district’s facility planning decisions. Additionally, this audit should be completed on an annual basis to maintain safety and optimal science teaching and learning.

Listed below are concerns as identified by current science teachers at Indian Hills Junior High and Stilwell Junior High.

Safety—Indian Hills

- All science rooms need to be equipped with emergency shower and eye wash stations
- Proper drainage for existing shower/eye wash stations
- All electrical outlets in 4 of the 6 rooms need GFCI outlets as per code
- New acid cabinet with proper ventilation—present cabinet will not close or lock
- Proper ventilation for alcohol cabinet
- Size of classrooms—set up for 24 students—any more students and difficult to use lab equipment and move around safely

Safety—Stilwell

- Proper drainage for existing eye wash stations
- Plumbing for eye wash stations releases a lot of rust into the water
- Strong gas smell when gas jets are in use AND when not in use—leaky jets?
- Drainage in two adjacent science rooms—backs up into rooms when both are used
- Older rooms—gas jets are directly under cupboards

Maintenance/repair—Indian Hills

- Cupboards becoming unattached from wall in store room off of room 235
- Gas jets need to be cleaned and/or replaced
- Drains need to be cleaned and flushed/drain covers to prevent pens/pencils and other materials from getting into drains

Maintenance/repair—Stilwell

- Older science rooms—drains/plumbing—rooms are flooding from running water—The last time this occurred, maintenance came in with a “snake”, it became stuck and had to be torched off—still remains in the pipes
- Check ventilation systems in older rooms
- Leaky plumbing in older rooms
- Older classrooms—heat-resistant counter tops

Room layout/design—Indian Hills

- Difficult for students to see the board or listen to presentations when the room is set up only with lab stations
- Even with lab set-up---arrangement of lab makes it difficult to have adequate space for lab

Miscellaneous—Stilwell

- Older science rooms do not have whiteboards. The extra dust from chalkboards may be damaging to computers and other technology added to the classroom
- The two newer science labs do not have hot water available.
- Storage for shared materials is inadequate

Area 4: K-6 Science:

Option 1- Enhancing general education classroom facilities to teach science

This option encourages that improvements be made to general education classrooms in the K-6 buildings that would support and strengthen science instruction. Research clearly reflects that maximum student experiences in exploring, collecting information, organizing information, making decisions about the information will strengthen student skills in flexible thinking, critical thinking, and increase student achievement on standardized tests. With a national focus on Science, Technology, Engineering and Mathematics (STEM) and the focus on science inquiry in the required concepts skills and concepts of the Iowa Core Curriculum, quality science facilities our elementary buildings for science education is more vital now than ever.

Possible enhancements include:

- Committing at least one classroom at each grade level (grades 4-6) as a science classroom. This would include adding additional sinks, electrical outlets, tile flooring, additional storage, etc...
- Dedicating additional storage in buildings for science equipment
- Integrating science models into buildings (ie- proportional sizes and distances of the planets of the solar system in the floor of a hallway; a painted, scale outline of T-Rex on the asphalt playground; parabolic dishes in the playground to demonstrate the travel of sound waves; weather stations on the roof; a functional sun dial in the playground; wall murals/paintings of food webs of Iowa habitats...)
- Integrating technology to enhance teaching and learning (simulations, web streams, data camera and projection units, data collection probe ware...)
- Committing campus space for outdoor classrooms (gardens, bird feeders, Iowa Prairie, wild flowers, native trees...)
- Providing facility to implement and model efficient recycling and re-using practices
- Providing facility to practice and model environmentally friendly practices within the building (automatic switches for lights; solar energy usage; natural lighting, wind power)

Option 2- Science Laboratory Classrooms in K-6 Buildings

This option advocates for using a functional science laboratory classrooms in each of the elementary buildings. Jordan Creek and Westridge have these rooms, but have been unfortunately transformed into other functions, due to building space needs.

One could say that anything done in a science lab could also be done in the regular classroom. The facts indicate otherwise. From actual WDM teacher testimonials, science investigations in the science lab become teacher demonstrations in the general classroom, if they are done at all. With a national focus on Science, Technology, Engineering and Mathematics (STEM) and the focus on science inquiry in the required concepts skills and concepts of the Iowa Core Curriculum, the use of science laboratory classrooms in our elementary buildings is more vital now than ever.

Rationale:

- * The science laboratory classroom provides an atmosphere and climate for students to Safely focus on science curriculum and investigations.
- * The science laboratory classroom has necessary sinks, electricity, safety features, tile flooring, ventilation and storage to carry out “messy” science investigations and activities.

- * Proper use of the science laboratory classroom frees up the regular classroom from science investigations (requiring equipment, messy investigations...) that may interfere with other regular occurrences in the classroom.
- * The science laboratory classroom enables student to experience inquiry science investigations which often occur over multiple days without "setting up and breaking down" everyday as occurs in the regular classroom.
- * The science laboratory classroom enables a building to consolidate science related equipment and supplies into one central location.
- * The science laboratory classroom enables teachers to more efficiently prepare for science investigations and activities.
- * The science laboratory classroom could feature several types of technology specific to science in a single room, rather than duplicating the technology throughout the building.
- * Proper use of the science laboratory classroom frees up the regular classroom from the encumbrance of science equipment and supplies.

A survey was given to current Jordan Creek and Westridge teachers regarding the use of a science laboratory classroom. Feedback was mixed. Some teachers stated that they used the laboratory classroom, while others said that they did not use it very much.

Committee Recommendations

1. **Grades 7-12:** This committee recommends that all buildings perform a self-audit, using the "*Building for Safety in Secondary School Science Facilities: An Audit*" from the resource entitled *NSTA Guide to Planning School Science Facilities*, 2nd edition. NSTA Press. 2007. This process would ensure an organized, systematic and objective analysis of the current status of science facilities in each building. This self audit would assist buildings in identifying any issues or needs regarding their science facilities. These issues and needs should then be folded into the district's facility planning decisions. Additionally, this self-audit should be completed annually to maintain safety and optimal science teaching and learning.
2. **Valley High School:** This committee recommends that the specific science needs at Valley High be addressed as soon as possible. The VHS science facility has significant issues regarding safety, Iowa code, ADA Standards and the basic update of essential science facilities. The current deteriorating science facility inhibits positive and productive science teaching and learning, resulting in very real challenges to implementing the current science curriculum.
3. **K-6 Buildings:** This committee recommends that Option 1 be implemented as completely as possible. In addition, this committee advocates the addition of a science laboratory classroom **only** if the footprint of the building is expanded. Teacher in-service would be required to train all teachers in the building in how to best utilize the lab classroom. Due to fiscal requirements, this committee does not recommend establishing a stand-alone science laboratory classroom if the footprint of the building is not expanded.