

TARGETED PRICE ESTIMATE FOR STEM AND COMMUNICATIONS MEDIA ARTS SMARTLAB™ LEARNING ENVIRONMENTS FOR

Gwendolyn Brooks Middle School
Harvey, Illinois

JANUARY 23, 2018



“By providing a high-quality education we can hope to achieve a better world. If an engaging STEM curriculum is the pathway to that goal, then I am blessed to have a SmartLab as my means of transportation.” NASA Outstanding STEM Teacher 2011



Version 1

Contact Information

Creative Learning Systems

Creative Learning Systems designs and implements engaging STEM learning environments to build 21st century skills. Combining cutting-edge technology with standards-based curriculum, we help provide students of all ability levels with challenging and engaging learning opportunities. Students learn to use and apply technology. They learn to manage projects and problem solve. They communicate and collaborate. They build skills necessary to compete in our global economy.

Creative Learning Systems corporate offices are in Longmont, Colorado.

Web site: <http://www.creativelearningsystems.com>
Address: 1140 Boston Avenue
Longmont, CO 80501
Phone: (303) 772-6400 or (800) 458-2880
Fax: (303) 772-6422

Principle Contacts:

Mike Mitchell
Regional Sales Manager
(303) 772-6400 or 800-458-2880 Extension 116
(224) 245-4372
mmitchell@creativelearningsystems.com

Shelley Nault
Director of Operations
(303) 772-6400 or 800-458-2880 Extension 723
snault@creativelearningsystems.com

Kurt Williamson
Vice President, Learning Environments
(303) 772-6400 or 800-458-2880 Extension 112
kwilliamson@creativelearningsystems.com

Gary Nelson
President
(303) 772-6400 or 800-458-2880 Extension 105
gnelson@creativelearningsystems.com

Matt Dickstein
Chief Executive Officer
(303) 772-6400 or 800-458-2880 Extension 102
mdickstein@creativelearningsystems.com

CONTENTS

CONTACT INFORMATION.....	2
CONTENTS	3
INTRODUCTION AND OVERVIEW	4
DELIVERABLES AND PRICE	5
Deliverables	6
Purchase Price	7
Exclusions.....	7
DESCRIPTION OF STEM SMARTLAB DELIVERABLES.....	8
Physical Layout, STEM Smart Lab - Islands	9
Additional Elements	13
DESCRIPTION OF COMMUNICATIONS MEDIA ARTS SMARTLAB DELIVERABLES	17
Physical Layout, Communications Media Arts Smart Lab - Peninsulas.....	17
General Description	17
Additional Elements	19
Curriculum Resources	27
ADJUNCT SERVICES	31
Facility Planning	31
Installation Services.....	31
Professional Development.....	31
Customer Support	31
Curriculum and Support Agreement.....	31
Support Agreement – Student Broadcast Studio	32
WARRANTY	32
What's Covered?	32
What's Not Covered?	32
Warranty Conditions	32
Post-warranty and extra-warranty support	32
CUSTOMER RESPONSIBILITIES.....	33
Facility Preparation	33
SmartLab Implementation Timeline.....	33
Typical Training Schedule	35
NETWORK INFORMATION.....	36
Patch Panel (Customer Supplied)	37
Premise Wiring (Customer Supplied)	37
Rack (Customer Supplied)	37
Pylon (CLS Supplied)	37
Switch (Customer Supplied)	37
Lab Server (CLS supplied)	37
Client Computers (CLS or Customer supplied)	38
Printer (CLS supplied)	38
Existing School Network and the Internet	38
ATTACHMENTS	39

Introduction and Overview

Creative Learning Systems has successfully installed STEM learning environments in hundreds of schools nationwide. Our partners include public, charter and private schools serving a wide range of student populations and encompassing varied educational philosophies and program objectives. The common thread among Creative Learning Systems' clients is a desire to engage, motivate and empower learners to build 21st century skills and to prepare their students to compete in a global economy.

In the 2006 report, "**Are They Really Ready to Work**" employability skills dominate rankings of knowledge and skills expected to increase in importance over the next five years. Employers identified critical thinking /problem solving, information-technology application, teamwork/collaboration, creativity/innovation and diversity as the top five such skills.*

Our turnkey learning environments feature fully integrated systems of hardware, software, furnishings, online curriculum, educational kits, manipulatives, professional development, assessment tools, ongoing support, training, enhancement and upgrade services. Creative Learning Systems' hosted curriculum integrates technology education with core academic subjects using a project-based approach to learning. We empower both teachers and students to develop and explore areas of personal interest, while meeting state and national standards.

The environments we design help students learn about technology, but more importantly, students learn how to *use* technology. Therefore, as technology changes students can quickly and effortlessly adapt. In a Creative Learning Systems environment, technology also functions as a learning tool. Students learn critical problem-solving skills in a multidisciplinary environment. They have numerous opportunities to apply principles of math, science, language arts and other academic disciplines in engaging, relevant ways. As they create and present portfolios of their work, they develop communication skills vital to scholastic and professional success.

In an elementary school SmartLab, students develop foundational technology skills in mechanics and structures, robotics, circuitry, science and data acquisition, computer graphics, and publishing and multimedia. Students learn how to develop project objectives and document their learning in ePortfolios, daily journals and project presentations. The elementary SmartLab is designed to support rotational learning engagements in upper elementary grades and whole-class, teacher led activities for younger learners.

In a middle school SmartLab, students begin to explore a wider range of technology including professional-standard software applications. Middle school SmartLab curriculum explores the scientific principles behind each system of technology in more detail and encourages a greater understanding of academic connections. Projects become more open-ended and learners are encouraged to adapt and expand projects to fit their own interests and connect with academic content from their other classes. Expectations for ePortfolio documentation and presentations are higher and students begin to self-assess performance along with their facilitator.

In a high school SmartLab, students who have been through the middle school program are encouraged to explore specific areas of technology, such as digital media arts, robotics, or alternative and renewable energy in more depth. High school learners are often ready to engage in extended projects of their own design that utilize a broader variety of technology tools and bridging multiple academic subject areas.

The principles that guide the custom design of each Creative Learning Systems learning environment are based on leading-edge research into *how* people learn. Educational theories of constructivism, brain-based learning and multiple intelligences are combined with over 20 years of field testing, research, development and program refinement. The result is a powerful STEM learning environment that engages learners of all abilities and opens new doors to academic and personal success.

* The Conference Board, Corporate Voices for Working Families, Partnership for 21st Century Skills, and the Society for Human Resource Management, "Are They Really Ready to Work" Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce," www.21stcenturyskills.org/documents/FINAL_REPORT

A key element of Creative Learning Systems reputation as a reliable partner in education is our ongoing commitment to service and support. With each new learning environment, Creative Learning Systems provides extensive, on-site professional development and technical training. Facilitators have numerous opportunities for further professional development as well as access to the advice and support of an active community of SmartLab facilitators in other schools. Creative Learning Systems has been at the forefront of learning technologies for over 20 years and, as an educational partner, you have access to ongoing consultative services from our team of experts. At Creative Learning Systems, we are fully committed to the long term success of your school, your staff, and your students. That's our promise.

Another important factor that sets us apart from other STEM education providers are the key distinctions between the SmartLab and modules-based programs. First, the SmartLab is designed for **personalized learning**, as a student-centered learning environment. Autonomy and self-direction are encouraged and rewarded. SmartLabs are designed and provisioned with a wide array of technology and learning resources to support learners with different interests and abilities. Modules-based programs guide learners through a more narrow set of learning activities predefined by the vendor.

SmartLab learning engagements are academically-oriented activities **designed to focus on the development of 21st century skills** - critical thinking, problem solving, collaboration, communication and project management. Learners explore science, math and engineering (STEM) through applied technology; also building connections to social studies, language arts and other academic subjects along the way. Modules-based programs approach technology as a limited set of vocational skills and the integration of multiple technology applications and/or other subjects is not as emphasized.

SmartLabs provide for **authentic assessment** of learning based on portfolios developed and presented by students to evidence project work and document learning. Modules-based programs rely on a computer-based management system to deliver pre and post tests to assess a narrowly-defined knowledge/skill set.

The SmartLab is a **fully-customized learning environment** designed specifically for each school in collaboration with educators, administrators and other school staff. The goal of the program; whether stand alone or used to enhance an existing curriculum, is to engage students and help develop 21st century skills. Modules-Based programs limit customization to the selection of available learning modules.

SmartLab professional development is provided through **onsite instruction by a CLS specialist** and all ongoing support is also provided directly by Creative Learning Systems. Schools are encouraged to include additional staff members in the initial training and orientation, at no added cost to help increase awareness and practice of the "student centered" learning approach throughout the school. Professional development for modules-based programs is typically specified as group instruction at a vendor location. Support is typically provided by area sales representatives.

SmartLabs are designed to provide resources and practices that can **support STEM education throughout an entire school system** - using the SmartLab as an interdisciplinary center of application. Modules-based programs are narrowly designed to support a specific vocationally oriented, technology education program.

For all of these reasons, we are proud to present this Targeted Price Estimate for a Creative Learning Systems STEM and Communications Media Arts SmartLab program to **Brooks Middle School**.

"Of all the investments we make in educational technology, the SmartLab has been the most effective in actually putting technology in the hands of our students."

*Dr. Velma Villegas, Superintendent
Southwest Independent School District TX*

Deliverables and Price

This section provides the details about the purchase price and lists the deliverables. More information about the deliverables can be found in the following sections.

Deliverables

The purchase price includes:

Design and Implementation

- SmartLab system design, consulting, and planning services; including specific facility requirements.
- Network consultative services and coordination with selected wiring contractor
- Setup, installation, testing and configuration of all furniture, hardware, equipment, computers, software, and printers to be used within the SmartLab.
- Coordination and installation of all school owned software within the SmartLab environment.
- Imaging of all SmartLab client workstations and servers for easy recovery.

Deliverables

- **Five Island STEM SmartLab™ for up to 30 learners**
- **Five Peninsula Communications Media Arts SmartLab™ for up to 30 learners**
- All furniture work/learn stations, Power Pylons™, and Ceiling Power Panels
- Specifications for Customer-purchased Apple Macintosh computers
- Creative Learning Systems Learning Launcher Curriculum with supportive kits and resources for two unique 30 student course offerings
- Creative Learning Systems ePortfolio Assessment System
- All equipment, furnishings, kits, apparatus, libraries, curriculum and software described in the following sections. (See Attachment A for specific list of deliverables)

Professional Development and Support

- **Four days of onsite** professional development and technical training for each environment
- Two Advanced Facilitator Development Conference Tuition Slots
- Technical and Pedagogical support available via toll-free 800 number
- Curriculum and Support Agreements (CSA) \$4,000 per year:
 - ✓ Access to hosted Learning Launcher Curriculum including all available updates and additions
 - ✓ Access to hosted Facilitator Resources including all available updates and additions
 - ✓ Up to three days additional onsite professional development in the event of facilitator turnover
 - ✓ Unlimited telephone and online technical & pedagogical support
 - ✓ Discounted rate for onsite technical support and/or additional professional development
 - ✓ Discounted tuition for future Advanced Facilitator Development Conference (AFDC)
 - ✓ Up to \$1,000 per year in enhancement and replacement parts from the SmartLab catalog
- Support Agreement for the Student Broadcast Studio for \$1,000 per year
 - ✓ Up to two days additional onsite professional development in the event of facilitator turnover
 - ✓ Unlimited telephone and online technical & pedagogical support

Additional Brooks Middle School STEM SmartLab elements outlined within include:

- Facilitation Zone
- Custom configured Dell server
- SmartLab Media Systems/Integration Services
- SCRS™ (SmartLab Computer Restoration System)
- Replication Platform™
- 3D Printer System
- Construction Set Storage System with Replacement Construction Sets for Each Class Period
- LCD Monitor Arms
- Advanced Exploration Collection

- Presentation/Collaboration Collection with the seventy inch LED display
- Computer Control Monitoring System
- Professional Development Description

Additional Brooks Middle School Communication Media Arts SmartLab elements outlined within include:

- Facilitation Zone
- SmartLab Media Systems/Integration Services
- SCRS™ (SmartLab Computer Restoration System)
- Carvey System
- Advanced Media Collection
- Video Production Workstations™
- Student Broadcast Studio
- Professional Development Description

Purchase Price

The total purchase price for the Creative Learning SmartLab described herein is a firm quotation valid for sixty (60) calendar days. All amounts are (US) dollars and the purchase price is F.O.B. destination.

SmartLab STEM Learning Environment for up to 30 Learners:	\$178,999
Curriculum and Support Agreement (CSA):	<u>\$ 4,000</u>
Total:	\$182,999

SmartLab Communication Media Arts Learning Environment for up to 30 Learners:	\$149,131
Curriculum and Support Agreement (CSA):	\$ 4,000
Student Broadcast Studio:	\$ 66,718
Student Broadcast Studio Support Agreement:	<u>\$ 1,000</u>
Total:	\$220,849

Required but not included:

Estimated Cost of Computers:	\$ 54,220
Estimated Cost of Seating:	\$ 9,589
Estimated Cost of Seating for the Presentation/Collaboration Collection:	\$ 1,387
<i>Customer</i> Facility Improvements:	TBD

This quotation replaces all previous quotations sent prior to 1/23/2018.

Important to Note: The price for the Curriculum and Support Agreements is \$8,000 annually and runs July 1st to June 30th. This five year agreement may be paid in full at the time of the initial SmartLab purchase or billed annually. The price per year is locked-in once the agreement is signed.

Exclusions

The Brooks Middle School SmartLab, as proposed, is a complete full-featured learning environment. The only exclusions are seating, facility improvements, removal of trash and debris, client computer hardware, and **network virus protection**. The customer must provide these items.

Detailed Exclusions:

- Seating – Student and Teacher Chairs should be supplied for the SmartLab by the customer. Student chairs should be adjustable in height and have casters. Creative Learning Systems recommends the Virco SGTASK18 for student chairs and can make additional recommendations if necessary. Creative Learning Systems recommends the Virco SGTASK18AL series task chair with arms for the facilitator. Sixty (60) student chairs and two (2) facilitator chair should be supplied. Additional seating is required for the presentation/collaboration zone. These chairs do not need pneumatic lift adjustment or casters. They can be standard school stack chairs. Creative Learning Systems recommends the Virco SG4-18 stack chair. Ten (10) student chairs are should be supplied.
- Facility Improvements – Electrical and data network services should be installed as per the electrical and data layers of the plan view drawing (final electrical and data layers to be delivered with the final proposal). Optional facility improvements include anti-static carpeting, dropped acoustical ceiling, marker and tack boards, paint, etc. Creative Learning Systems prides itself on working with district/school administrators and school district architects on final room preparation and provisioning.
- Removal of Trash and Debris – The SmartLab environment creates a large amount of trash and debris during the installation process. It is recommended that the district/school provide a 20 yard open top dumpster or equivalent for disposal of all packing materials associated with the SmartLab. Creative Learning Systems is committed to participating in your LEED (Leadership in Energy and Environmental Design) project/certification, and will follow each customers instruction during the implementation process.
- Client Computer Hardware – Client computer hardware and customer supplied software are specified in Attachment B.

Prior to the arrival of the CLS installation team, CLS requires notification that the facility has been “released” by the contractor or district officials and is ready for the SmartLab installation. Please phone Shelley Nault at 1-800-458-2880, extension 723, no later than twenty-one (21) days before the release date.

Description of STEM SmartLab Deliverables

This section describes the hardware, software, equipment and educational resources that Creative Learning Systems will provide in your SmartLab learning environments. Also in this section is a description of additional elements that are core to every SmartLab, and optional elements that have been selected specifically for Brooks; as well as the information you requested on curriculum, alignment to standards, and core technological competencies directly addressed through SmartLab learning resources.

Physical Layout, STEM Smart Lab - Islands

The SmartLab is comprised of flexible work-learn stations called “islands”. Each island is a collection of furniture and equipment, consisting of three workstations radiating from a ceiling-high, three-sided Power Pylon™. A typical island can accommodate up to six students at a time.

The Power Pylon distributes network data and electrical utilities to the three workstations through a system of quick-connect fittings. Power Pylons and workstations are arranged so the facilitator retains an unobstructed view of learner activities throughout the room. Each island workstation is readily detachable from the Power Pylon.

All workstations are constructed of rugged, high-quality metal structural elements, mounted on oversized locking rubber casters.

The SmartLab described in this Targeted Price Estimate is designed to provide a rich and diverse technology-based learning experience for classes of 30 students.



Creative Learning SmartLab

The SmartLab is richly-provisioned for advanced technology studies as well as general academics and career exploration.

SmartLab learning resources are organized around eight areas of core technological competency. These are: Circuitry, Computer Graphics, Digital Communications, Mechanics and Structures, Robotics and Control Technology, Scientific Data and Analysis, Software Engineering, and Sustainability. Each of these core competencies is described below, along with the integrated systems of equipment, software, hardware and educational resources to support project-based, student-centered learning in those areas of study.



Computer Graphics

In Computer Graphics, students explore areas such as graphic arts, image capture, photo processing and manipulation, animation and special effects. They learn to distinguish between, and effectively use, bitmap graphics (digital “painting”), and object-oriented graphics (computer-aided “drawing” or “CAD”) applications. As learners progress, they integrate computer graphics with other software applications to create advanced graphic and commercial art, websites and multimedia presentations. Computer graphics also serves as an important portfolio development tool for documenting projects and learning processes.

Examples of computer graphics tools included in the SmartLab are:

- 3D Printing System and TinkerCAD
- Digital Still Motion Cameras
- Doodle for Google Art Contest
- Google Art Project
- Google SketchUp Software
- Photo Tripod
- Portable Lighting Studio
- Punch Professional 3D Home Design Software
- Curriculum and/or additional learning resources for all above listed items



Circuitry

The study of circuitry is explored through electricity, pneumatics and microelectronics. Students develop an understanding of the scientific and technological principles underlying each of these systems. With this foundation, students design complex systems utilizing each technology.

SmartLab resources for the study of circuitry include:

- Arduino Programmable Circuits
- MaKey MaKey Conductivity Exploration System with Accessory Collection
- Pneumatics System with Component Attachment Platform, Pneumatic Service Module, and Portable Silent Compressor
- Snap Circuits Electricity Exploration Collection with Multimeter
- Snap Circuits Green Energy Collection
- Curriculum and/or additional learning resources for all above listed items



Digital Communications

Engagements in the Digital Communications system provides new experience and reinforces the ability to communicate effectively utilizing single, blended, and advanced media. Digital Communications encompasses the capture and production of content in any single media, such as print, sound or electronic media. It includes word processing, presentations, and graphic representation of data or processes in the form of flowcharts, tables and graphs. It also includes the capture, production and presentation of single-media content such as audio, video and digital still images. Learners quickly progress from developing core competencies in these areas to the regular application of these tools to document their learning throughout the SmartLab. Also, learners develop advanced communications skills through the integration of two or more media using technology-based tools. Students explore linear and interactive presentations and the applications for each.



Learners progress from basic to more advanced software and production tools, creating dynamic video presentations, animated graphics, websites and interactive e-portfolios. As with all documentation and presentation applications in the SmartLab, the emphasis quickly shifts from developing necessary skills to the application of the technology for portfolio development and presentation of learning.

Digital communications resources include:

- Apple Garage Band (supplied with Macintosh computers)
- Apple iMovie (supplied with Macintosh computers)
- Camtasia Software
- Digital Cameras
- Google Sites Software for ePortfolio Creation
- Microsoft Office Software Suite – class license
- Photo Tripod
- Portable Lighting Studio
- STEM Career Exploration
- USB Microphone and Stand
- Curriculum and/or additional learning resources for all above listed items

Mechanics and Structures

In Mechanical Systems, learners create and study structures and machines. Hands-on learning engagements foster an understanding of simple and complex machines and structural physics.

Mechanics and structures construction sets include:

- fischertechnik Mechanisms and Structures Kits
- IQ-Key Capsule Based Modeling Systems
- K'nex Construction Sets
- West Point Bridge Designer
- Zometool Geodesic Structuring and Interdisciplinary Learning System
- Curriculum and/or additional learning resources for all above listed items
- All mechanics and structures collections delivered as construction sets are provisioned to accommodate multiple classes so projects do not have to be deconstructed each class period.

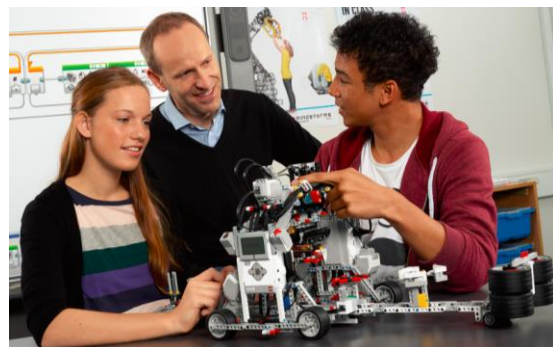


Robotics and Control Technology

In this area of study, mechanical processes are managed through automation control interfaces and learners design and program robotic systems to perform task-oriented challenges. Students explore logical programming and explore how sensors, electronic and computer controllers are used to manage complex mechanical processes. The concept of sense, decide, and act is introduced and students develop whole-systems perspectives.

SmartLab robotics and control technology resources include:

- Lego EV3 Control System with Software
- Curriculum and/or additional learning resources for all above listed items
- All control/robotic systems delivered as construction sets are provisioned to accommodate multiple classes so projects do not have to be deconstructed each class period.



Scientific Data and Analysis

In this system of technology, students collect experimental data using testing equipment and probeware, typically linked with a computer-controlled interface. Data is then analyzed to draw conclusions from experiments. Students engineer and test scale models and analyze materials and structure. Using chemical, physical and bioscience probeware, students collect and analyze experimental data to explore principles of science through hands-on, inquiry-based projects.

SmartLab scientific data and analysis tools include:

- Astronomy Experiences with MicroObservatory
- Extreme Weather and Monster Storms
- Global Information Systems with ArcGIS
- Global Information Systems with Google Maps, Worldmapper, and the Welikia Project
- Probeware for Measuring Light, Temperature, Movement, Voltage, Acidity of fluids and Human Physiology
- Probeware for the Study of STEM to Integrate with Lego EV3
- Curriculum and/or additional learning resources for all above listed items

Sustainability

Now your SmartLab students can explore one of the most exciting areas of emerging technology — ***Sustainability***. Sustainability projects connect core academic content with 21st century skills through engaging, inquiry-based exploration. Students explore this exciting area technology with hands-on, minds-on activities connecting math, science, social studies and economics. Here are just some of the projects your students will explore:

Solar Energy Discovery Collection

- Understanding photovoltaic cells
- Solar Energy and High Performance Homes
- Solar cooker design and testing
- Solar race car design and testing

Wind Power Discovery Collection

- Understanding wind turbines
- Propeller blade design
- Wind farm design
- Storing Wind Power

Hydrogen Fuel Cell Discovery Collection

- Electrolyzing water for hydrogen fuel
- Generating power from hydrogen fuel cells
- Design a hydrogen highway
- Hydrogen fuel cell race cars



The Sustainability Collection features twenty-seven of Creative Learning Systems' **Learning Launchers™** that cover the introduction to alternative and renewable energy, solar energy, wind energy, hydrogen fuel cells, and power efficiency. There are Learning Launchers at three different levels of difficulty to guide your learners through a variety of engaging activities with video tutorials, data collection worksheets, portfolio development suggestions and lots of ideas for extended exploration!

Software Engineering

In this area of study, students learn to create mobile and computer desktop applications. Initially in their experience, students create interactive online greeting cards, and computer animations. They simulate real systems and processes, and even create basic computer games. Later students have the opportunity to create real desktop and mobile app games that they can eventually publish and sell.

Software engineering resources include:

- App Inventor Software
- Arduino Programmable Microelectronics Collection
- Digital Sandbox Programmable Microelectronics Collections
- MIT Scratch Version 2 Software
- Stencyl Software
- Touch Develop Software
- Curriculum and/or additional learning resources for all above listed items



Additional Elements

Facilitation Zone™

The Facilitation Zone provides a dedicated work area for SmartLab Facilitators. It is designed and provisioned to support SmartLab management, student guidance and assessment, provide critical professional resources and enable ongoing technical support.

The Facilitation Zone includes locking cabinets, a custom designed work/learn station with a LCD monitor arms, a collection of professional-development resources, learner-facilitation aids, application software packages, and systems for remote-connection to software-support and facilitator-support services provided by Creative Learning Systems.



SmartLab File Server

The server is the heart of the SmartLab network. Creative Learning Systems technicians carefully develop system specifications and then custom configure each Server to assure stability, functionality, and supportability for each SmartLab learning environment.



SmartLab Media/Systems Integration Services

Creative Learning Systems technicians carefully develop system specifications and then work with your technology team to assure stability, functionality, and supportability for each SmartLab learning environment. Our technicians collaborate with your technicians to specify hardware, establish the proper security over specified shares, upload over one hundred gigabytes of resource data to be utilized by facilitators and students, establish the client workstation base image, install the environment's software, and establish a cohesive redundancy strategy.

SCRS™ (SmartLab Computer Restoration System)

The SCRS™ includes a secure lock box containing thumb drives, external hard drives, boot CD's and, in SmartLabs that have Apple computers, Super Drives. The final configuration of every computer in the SmartLab is stored on SCRS memory and the SmartLab file server. If any or all computers become inoperable, the facilitator can utilize these resources with CLS technical support to restore the computers to their originally installed state.

The SCRS ensures simple, secure system recovery in the event of serious computer malfunction.

Replication Platform™



The Replication Platform houses and distributes power and data to a color laser printer device. An integrated shelf provides convenient storage for consumables. The printer is fully-networked, enabling learners and facilitators to access it from any computer workstation.

3D Printer

With the most innovative technology right in your SmartLab, you can unlock the creativity within your learners. Easy to use straight out of the box, you're ready to start building anything you need, anything you want, or anything the world has been waiting for.

It is easy to build objects with the Dremel on-board software or Tinker CAD, which enables a preview of each model before you build. Additionally, the Dremel 3D Idea Builder comes equipped with a pre-installed extruder (the part where the filament comes out and builds your model), unlike other 3D printers that require you to install it yourself. This makes setup as simple as plugging in your printer, and you're ready to build! Along with easy-to-use software, you can start turning your ideas into models and projects in minutes.



The Idea Builder features a closable door that keeps out dust and prying fingers. This fully enclosed workspace also stabilizes the temperature for an optimal build, and reduces noise so your models and projects build quietly in the background while you do other things.

Your Dremel 3D Idea Builder is fully operational even without hooking it up to a computer! With the full color touchscreen, you can select models to build, and can control your print process with Start, Stop, and Pause buttons... and much more.

Construction Set Storage System with Replacement Construction Sets for Each Class Period

A wire-frame rack system houses construction kits provisioned for each class period. The system allows a designated storage space for each construction set. The construction sets include:

- fischertechnik Profi Mechanics and Statics Motorized Mechanisms collection (6 ea)
- IQ-Key Capsule based modeling systems (6 ea)
- K'nex Colossal Building Collections (6 ea)
- Lego EV3 Mindstorms control technology collections (6 ea)
- Lego EV3 Mindstorms expansion technology collections (6 ea)
- Solar Energy Automotive Building Collection (6 ea)
- Zometool Mathematical Structuring Collections (6 ea)
- Hydrogen Car Construction Collections (6 ea)



LCD Monitor Arms

Due to the wide range of activity that takes place in the SmartLab, CLS supplied furniture must be flexible and accommodate any activity or seating configuration that may be necessary. The picture to the right shows a VESA compatible LCD monitor/all in one computer attached to a CLS supplied monitor arm. The monitor below has attached speakers so the desktop surface is kept completely free from non-essential devices.



Notice the students have plenty of room to spread out curriculum and peripherals because the LCD monitor/all in one computer with attached sound bar/built in speakers does not take up any desk space. Another advantage of this configuration allows students to sit anywhere around the furniture they desire because the LCD monitor/all in one computer will simply move to any angle and height for optimal viewing.

Advanced Exploration Collection



The Advanced Exploration Collection features a wide range of learning resources to facilitate the study of core competencies in greater depth. It provides additional challenges for learners with advance capabilities or those who spend multiple semesters in the SmartLab environment. These resources allow learners to tackle increasingly advanced projects and create sophisticated portfolios of their work.

With this collection, learners utilize resources that feature familiar elements, but are also more complex than the systems they previously experienced. Advanced experiences include integration of physical simulations with computer-controlled interfaces and point-and-click programming languages,

microelectronics, prototype development, bio-related technology, team-effectiveness training, advanced graphic design, 3D modeling/animation, project development and more.

Major equipment and software in the Advanced Exploration Collection includes:

- Arduino Programmable Microelectronics Collection
- Power efficiency collection
- Punch Professional 3D home design software
- Probeware to integrate with Lego EV3 for the study of STEM probeware and robotics
- Zometool geodesic structuring and interdisciplinary learning system

Presentation/Collaboration Collection with the 70" LED Display

This collection includes wall mounted seventy inch LED display, custom cabling, and professional audio system. The collection is also provisioned with a turnkey suite of software and learning media.

Here, groups of SmartLab learners can make or view presentations, and engage in focused discussions and creative team brainstorms. SmartLab Facilitators can use the collection for class meetings, and to provide direction and instruction to learners.

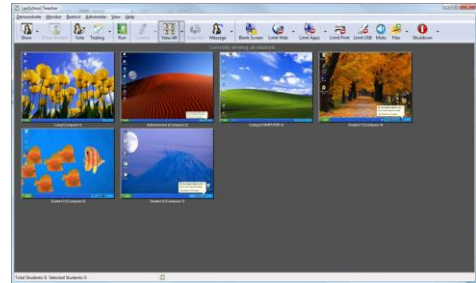


Computer Control Monitoring System

Facilitators in technology classrooms today are faced with the challenge and opportunity of using technology to teach. Computers are amazing educational tools, but they can also be a huge distraction to learning. The Internet, instant messaging, email and games are a constant temptation for students.

The computer control monitoring system removes these distractions so the facilitator can have a powerful tool to help keep students on task. No classroom management solution is easier to use or better suited for teaching in a 21st century classroom.

Teachers can reduce student distractions by blanking screens, limiting applications and limiting web browsing on student computers. This helps direct student attention from their computer to the teacher and keeps students on task.



Ideal for monitoring student activity within a classroom or lab setting, the thumbnail feature allows you to view all screens as well as see the current application and website that the students are running. Teachers can send messages to all or individual students.

Students can silently request help from the teacher. A small question mark appears on the thumbnail with the student question, which indicates they need help.

Professional Development

Facilitator training and professional development is a critical element in the success of the SmartLab environment. As such, it is included as an integral element of this Targeted Price Estimate. Creative Learning Systems provides a total of four (4) days of on-site facilitator training and professional development services for the SmartLab.

Technical concepts as well as good facilitation techniques will be discussed and practiced.



In addition to the initial professional development sessions, one tuition slot to the Creative Learning Systems annual facilitator conference, AFDC (Advanced Facilitator Development Conference), is included in this Targeted Price Estimate. Subsequent and additional registrations may be purchased at a discount rate under our curriculum & support agreement.

“Students who typically struggle suddenly become engaged. Mid-level students start pursuing more challenging work - and our high achievers? They soar.”

*Dennis Gable
Teacher, Elkhart Central High School IN*

Description of Communications Media Arts SmartLab Deliverables

This section describes the hardware, software, equipment and educational resources that Creative Learning Systems will provide in your SmartLab learning environments. Also in this section is a description of additional elements that are core to every SmartLab, and optional elements that have been selected specifically for Brooks; as well as the information you requested on curriculum, alignment to standards, and core technological competencies directly addressed through SmartLab learning resources.

Physical Layout, Communications Media Arts Smart Lab - Peninsulas

The SmartLab is comprised of flexible work-learn stations called peninsulas. A typical peninsula can accommodate up to six students at a time.

For Peninsulas, the network data and electrical utilities terminate at the wall. Peninsulas are arranged so the facilitator retains an unobstructed view of learner activities throughout the room.

All workstations are constructed of rugged, high-quality structural elements.



The SmartLab described in this Targeted Price Estimate is designed to provide a rich and diverse technology-based learning experience for classes of 30 students.



General Description

Creative Learning SmartLab

The SmartLab is richly-provisioned for advanced technology studies as well as general academics and career exploration.

SmartLab learning resources are organized around three areas of core technological competency. These are: Computer Graphics, Software Engineering, and Digital Communications. Each of these core competencies is described below, along with the integrated systems of equipment, software, hardware and educational resources to support project-based, student-centered learning in those areas of study.



Computer Graphics

In Computer Graphics, students explore areas such as graphic arts, image capture, photo processing and manipulation, animation and special effects. They learn to distinguish between, and effectively use, bitmap graphics (digital “painting”), and object-oriented graphics (computer-aided “drawing” or “CAD”) applications. As learners progress, they integrate computer graphics with other software applications to create advanced graphic and commercial art, websites and multimedia presentations. Computer graphics also serves as an important portfolio development tool for documenting projects and learning processes.

Examples of computer graphics tools included in the SmartLab are:

- Adobe Photoshop Elements Software Packages – class license
- Carvey Carving Machine and Software
- Professional Digital Still Motion Cameras
- Doodle for Google Art Contest
- Flatbed Document Scanner
- Google Art Project
- Google SketchUp Software
- Photo Tripod
- Portable Lighting Studio
- Punch Professional 3D Home Design Software Packages
- Tech-4-Learning Introductory Graphics software packages
- Curriculum and/or additional learning resources for all above listed items



Digital Communications

Engagements in the Digital Communications system provides new experience and reinforces the ability to communicate effectively utilizing single, blended, and advanced media. Digital Communications encompasses the capture and production of content in any single media, such as print, sound or electronic media. It includes word processing, presentations, and graphic representation of data or processes in the form of flowcharts, tables and graphs. It also includes the capture, production and presentation of single-media content such as audio, video and digital still images. Learners quickly progress from developing core competencies in these areas to the regular application of these tools to document their learning throughout the SmartLab.



Also, learners develop advanced communications skills through the integration of two or more media using technology-based tools. Students explore linear and interactive presentations and the applications for each. Learners progress from basic to more advanced software and production tools, creating dynamic video presentations, animated graphics, websites and interactive e-portfolios. As with all documentation and presentation applications in the SmartLab, the emphasis quickly shifts from developing necessary skills to the application of the technology for portfolio development and presentation of learning.

Digital communications resources include:

- Apple Garage Band (supplied with Macintosh computers)
- Apple Final Cut X Video Post-Production Software Packages
- Apple Motion Video After Effects Software Packages
- Apple Compressor Video Management Software Packages
- Apple Logic Software Packages
- Tech-4-Learning Claymation Animation Kit and Frames Stop Motion Software Packages
- Camtasia Software Packages
- Comic Life Software (class license)
- Crazy Talk Software Packages
- Professional Digital Still Motion Cameras
- DVD/CD Creation and Labeling Kits

- Flatbed Document Scanner
- Google Sites Software for ePortfolio Creation
- Microsoft Office Software Suite – class license
- Photo Tripod
- Portable Lighting Studio
- Professional Quality SD Card Compatible Camcorder
- SD Card Compatible Camcorders
- Royalty Free Audio Clips including Music Beds and Sound Effects
- Royalty Free Video Clips
- Sound Engineering Collections to include powered speakers, headphones, Mixers, MIDI keyboards, studio microphones, and software suites for looping, sequencing, notation, and sound mastering software.
- Power Production Storyboarding Software
- Super Arm Camera Clamping Systems, Video Tripod, and Dolly
- STEM Career Exploration
- USB Microphones and Stands
- Video Accessory Collection including Studio and Lavalier Microphones
- Curriculum and/or additional learning resources for all above listed items



Software Engineering

In this area of study, students learn to create mobile and computer desktop applications. Initially in their experience, students create interactive online greeting cards, and computer animations. They simulate real systems and processes, and even create basic computer games. Later students have the opportunity to create real desktop and mobile app games that they can eventually publish and sell.

Software engineering resources include:

- App Inventor Software
- Digital Sandbox Programmable Microelectronics Collections
- MIT Scratch Version 2 Software
- Stencyl Software
- Touch Develop Software
- Curriculum and/or additional learning resources for all above listed items



Additional Elements

Facilitation Zone™

The Facilitation Zone provides a dedicated work area for SmartLab Facilitators. It is designed and provisioned to support SmartLab management, student guidance and assessment, provide critical professional resources and enable ongoing technical support.

The Facilitation Zone includes locking cabinets, a custom designed work/learn station with a LCD monitor arms, a collection of professional-development resources, learner-facilitation aids, application software packages, and systems for remote-connection to software-support and facilitator-support services provided by Creative Learning Systems.



SmartLab Media/Systems Integration Services

Creative Learning Systems technicians carefully develop system specifications and then work with your technology team to assure stability, functionality, and supportability for each SmartLab learning environment. Our technicians collaborate with your technicians to specify hardware, establish the proper security over specified shares, upload over one hundred gigabytes of resource data to be utilized by facilitators and students, establish the client workstation base image, install the environment's software, and establish a cohesive redundancy strategy.

SCRS™ (SmartLab Computer Restoration System)

The SCRS™ includes a secure lock box containing thumb drives, external hard drives, boot CD's and, in SmartLabs that have Apple computers, Super Drives. The final configuration of every computer in the SmartLab is stored on SCRS memory and the SmartLab file server. If any or all computers become inoperable, the facilitator can utilize these resources with CLS technical support to restore the computers to their originally installed state.

The SCRS ensures simple, secure system recovery in the event of serious computer malfunction.

Carvey Carving System (part of the Advanced Exploration Collection)

Design software can be complicated. That's why we've built Easel®, a free web application that works seamlessly with Carvey. Design in 2D and view in 3D, instantly. Create a design from scratch, import an existing design you've made, or get started quickly from our library of projects that other Easel users have created and shared. Easel runs in the browser and connects to Carvey with USB. If you already have a favorite carving software, Carvey will work with that too.

Carvey works with a wide variety of real materials (shown below) - not only wood, plastic, and soft metals, but also linoleum, foam, and molding wax. Don't know the technical settings for your material of choice? No worries, Easel's material library is programmed with all the details, so you get it right the first time.

The Inventables store carries all the materials you could possibly carve, in precut sizes designed to fit perfectly in Carvey.



Connect Carvey to your computer via USB, click "Carve", and Carvey does the rest. Sit back and watch as Carvey cuts or engraves your design. Carvey enables you to create real objects, with the same level of quality as what you see on store shelves.



LCD Monitor Arms

Due to the wide range of activity that takes place in the SmartLab, CLS supplied furniture must be flexible and accommodate any activity or seating configuration that may be necessary. The picture to the right shows a VESA compatible LCD monitor/all in one computer attached to a CLS supplied monitor arm. The monitor below has attached speakers so the desktop surface is kept completely free from non-essential devices.



Notice the students have plenty of room to spread out curriculum and peripherals because the LCD monitor/all in one computer with attached sound bar/built in speakers does not take up any desk space. Another advantage of this configuration allows students to sit anywhere around the furniture they desire because the LCD monitor/all in one computer will simply move to any angle and height for optimal viewing.

Advanced Media Collection



The Advanced Media Collection features a wide range of learning resources to facilitate the study of core competencies in greater depth. It provides additional challenges for learners with advanced capabilities or those who spend multiple semesters in the SmartLab environment. These resources allow learners to tackle increasingly advanced projects and create sophisticated portfolios of their work.

With this collection, learners utilize resources that feature familiar elements, but are also more complex than the systems they previously experienced. Advanced experiences include video post-production with professional grade software, storyboarding, sound engineering,

animation, point-and-click programming languages, advanced graphic design, 3D modeling/animation, project development and more.

Major equipment and software in the Advanced Exploration Collection includes:

- Apple Compressor video compression software packages
- Apple Final Cut X video post-production software packages
- Apple Motion video motion software packages
- Camtasia screen writing and narration software
- Claymation systems and software
- Power Production storyboarding software
- Professional quality SDHC compatible camcorder
- Punch Professional 3D home design software packages
- SDHC compatible camcorders
- Sound Engineering Collections to include powered speakers, headphones, Mixers, MIDI keyboards, studio microphones, and software suites for looping, sequencing, notation, and sound mastering software.
- Super arm camera clamping systems, video tripod, and dolly
- Video Accessory Collection including studio and lavalier microphones

Video Production Workstations - (5 included in SmartLab)

The Video Production Workstation allows learners to shoot and edit broadcast quality video. The computer workstation specified in this Targeted Price Estimate will allow for at least ten hours of video storage. The secure digital high capacity (SDHC) is perfect for novice learners. The system also includes video editing software, video DVD creation software, and professional microphones.



Major equipment and software provided include:

- Professional quality digital video camera and accessories collection
- Tripod and dolly for camera
- Flexible camera holding arm with clamp
- Video editing systems
- Professional microphones
- Cables to connect all equipment provided

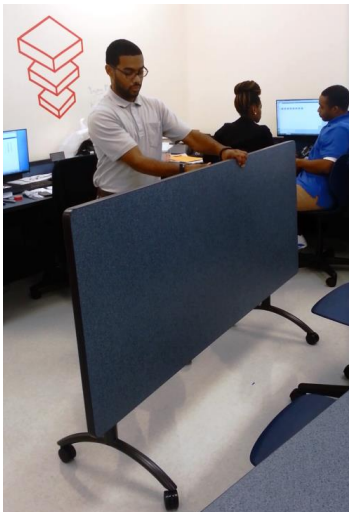
Presentation/Collaboration Collection with the 70" LED Display

This collection includes wall mounted seventy inch LED display, custom cabling, and professional audio system. The collection is also provisioned with a turnkey suite of software and learning media.



Here, groups of SmartLab learners can make or view presentations, and engage in focused discussions and creative team brainstorms. SmartLab Facilitators can use the collection for class meetings, and to provide direction and instruction to learners.

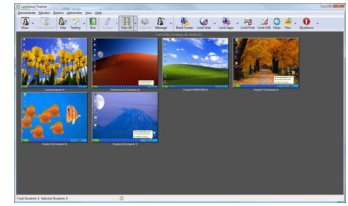
The system also includes two (2) flip top activity tables for the group learning zone.



Computer Control Monitoring System

Facilitators in technology classrooms today are faced with the challenge and opportunity of using technology to teach. Computers are amazing educational tools, but they can also be a huge distraction to learning. The Internet, instant messaging, email and games are a constant temptation for students.

The computer control monitoring system removes these distractions so the facilitator can have a powerful tool to help keep students on task. No classroom management solution is easier to use or better suited for teaching in a 21st century classroom.



Teachers can reduce student distractions by blanking screens, limiting applications and limiting web browsing on student computers. This helps direct student attention from their computer to the teacher and keeps students on task.

Ideal for monitoring student activity within a classroom or lab setting, the thumbnail feature allows you to view all screens as well as see the current application and website that the students are running. Teachers can send messages to all or individual students.

Students can silently request help from the teacher. A small question mark appears on the thumbnail with the student question, which indicates they need help.

Student Broadcast Studio

This section describes the hardware, software, equipment and educational resources that Creative Learning Systems will provide in your Student Broadcast Studio.

The Student Broadcast Studio allows learners to document events and create original video productions in a dynamic and exciting way. It features professional-grade production equipment integrated in a portable, easy-to-operate system. The heart of the system is a Tricaster editing device that allows for analog input from multiple devices. Any of these signals, whether in single or multiple formats, can be digitally mixed. The system enables output in either DV or analog format.



Inputs consist of two professional-quality video cameras, a video bank (integrated with the Tricaster), and a computer integrated with the System. Each of the inputs may be previewed on the LCD monitor array.

Output devices consist of a video bank integrated with the Tricaster, a computer, and the streaming capability of the Tricaster that will convert a video signal to a live, closed-circuit internet broadcast. The video bank is unique in that it does not require removable media; it features a very fast internal hard drive, allowing for digital storage of live video. Later, the stored video can be played to a post-production device such as the computer workstation included with the system.

Learners can capture live video sessions so it can be played later, transferred to DVD media, or simply archived. Conversion to Internet compatible formats is also managed through the system, allowing webcasts of either live or pre-recorded, high-quality video to school community members both inside and outside of the school.

Live video can be previewed from the output of the mixer on the monitor array. A professional-grade audio system, including powered desktop speakers and stands, is also included. The system configuration allows for simultaneous amplification of all audio input devices through the integrated speakers.



The system is housed on a workstation that includes rugged oversized casters and surge protected power services. This workstation also features an integrated CPU shelf for mounting computer hardware. The top platform accommodates three arm-mounted, 24 inch wide 16:9 format LCD flat panel displays, powered speakers, the Tricaster, the Tricaster switching control surface, and video production keyboard. Everything included with the Student Broadcast Studio is securely mounted, allowing learners to freely wheel the system around the school without risk of injury or damaging equipment.

Used in tandem, a professional presentation equal to news broadcasts done on mainstream television stations can be produced. The teleprompting system is linked to the computer on the Student Broadcast Studio Console. Easy to use software allows learners to write scripts for newscasts, announcements and other broadcast productions. A computer is connected to the system through an Ethernet connection to the Tricaster.

Learners can use the Student Broadcast Studio to document school projects and create compelling video presentations. For example, learners could utilize the system to broadcast a news item on school funding from the front of the state capital building, or a robotic Mars rover navigating the surface of the red planet. Such sophisticated effects are easily accomplished through the integrated mixer, dual professional-grade cameras and chroma-key editing features designed into the system.

Similarly, this advanced production system offers many applications for other classes and activities. Examples are as extensive as they are varied. A group of history students may recreate a civil war battle using authentic backdrops. A math student could illustrate a lesson on fractions while standing in front of visual aids, similar to a TV weatherperson. Science students can create a video demonstration of proper dissection techniques. A video-production club could create an informational video about the school. The yearbook staff can create video supplements published to CD or the web. The football team can produce a highlight reel to commemorate a successful season.



The Student Broadcast Studio is, of course, not limited to student use. Staff can use the system to create engaging video presentations to supplement regular classroom lessons. Professional development presentations integrating text and graphics are easily produced. Communications from school administration can be recorded or broadcast live to the school community.

Many schools also utilize such systems to present video-based announcements. A newscast format creates an especially engaging presentation. The system's ability to easily generate transitions, fades, and other special effects during a live production, allows such presentations to be created in an attractive, professional manner.

The system may also be made available to assist the general community. Students may use the system to create advertisements for businesses, produce public service announcements, or create video Christmas cards to raise money for charitable causes.

Teleprompting Systems



In addition, the professional-quality SDHC cameras are securely mounted on wheeled tripods providing similar ease of mobility. Also included are custom-designed teleprompting systems that will allow learners to read a script directly from the system mounted on a tripod.

Reflecmedia Curtain System



The Reflecmedia Chroma Matte Curtain is fully-integrated with the Student Broadcast Studio, allowing simple, “on-the-fly” creation of chroma-key virtual sets and backdrops. This technology enables learners to enhance video productions by blending video images of, for example, live presenters or scale models, onto virtual backdrops appropriate to their projects.

The camera and another video device such as pre-recorded video or still motion images from the Tricaster provide the input for these special effects. The Tricaster allows learners to easily create these engaging and professional effects. The blended images can be captured for storage, broadcast and/or post-production editing.



A Reflecmedia curtain integrates newly-introduced technology. Students now have access to an easier to use chroma-key system. This is accomplished through an economical, reflective gray curtain, and a LED light ring that attaches to the camera, and integrated technology to digitally “erase” the studio curtain, substituting sets and backdrops



limited only by the learner’s imagination.

This new technology also offers other advantages over the traditional cyclical wall; background and subject lighting requirements are minimal, and the screen requires less maintenance.

The Reflecmedia Curtain System includes a camera-mounted, LED light ring and the compatible reflective ChromaFlex curtain. Any situation that requires a virtual set can be produced with Chroma-Key Video Editing. For example, a news report on school funding can be presented from the state capitol; a presentation on buoyancy can be presented from under the ocean; an operating scale model of a lunar rover can be demonstrated from the surface of the moon. Possible applications for this technology are limited only by the parameters of a given project and the creative energy of the producers.

Confidence Monitor

This collection includes a forty-inch LCD display, custom cabling, and mobile cart. The LCD display allows for the talent in the studio to have a feedback monitor so they can see themselves live and they know where they are pointing on a live virtual set.



Portable Studio Lighting



Portable lighting is accomplished with two 24x32” silver interior soft boxes, tilt brackets, twelve 50W lamps, stands and wheeled carrying case. Three separate controls allow multiple combinations of bulbs together with no color shift.

Learners will be able to set up the perfect lighting situation wherever they desire to create the perfect shoot.

Professional Development

Facilitator training and professional development is a critical element in the success of the SmartLab environment. As such, it is included as an integral element of this Targeted Price Estimate. Creative Learning Systems provides a total of four (4) days of on-site facilitator training and professional development services for the SmartLab.

Two (2) days are provided for the Student Broadcast Studio. This training and development program is intended for those educators who will be directly involved in the day-to-day activities in the SmartLab (including up to four educators designated as alternate SmartLab facilitators).

Technical concepts as well as good facilitation techniques will be discussed and practiced.

In addition to the initial professional development sessions, one tuition slot to the Creative Learning Systems annual facilitator conference, AFDC (Advanced Facilitator Development Conference), is included in this Targeted Price Estimate. Subsequent and additional registrations may be purchased at a discount rate under our curriculum & support agreement.



Curriculum Resources

Every aspect of a SmartLab environment is carefully designed and integrated to foster development of higher-order thinking skills, build 21st century competencies, and support transdisciplinary academic connections. Problem solving, self-direction, analysis and synthesis, creativity, project management, collaboration and communication skills are among the critical abilities students gain from their SmartLab experience.

The SmartLab hosted curriculum system provides an engaging, project-based approach to academic content with particular emphasis in STEM, digital art and communications. Each of the curriculum resources described below work in concert with the environment design, equipment and learning resources, and professional development, to motivate, engage and inspire learners of all interests and abilities.

Learning Launchers™

Learning Launchers™ are the most comprehensive, interactive and student-friendly curriculum system ever developed for the SmartLab! Each Learning Launcher lesson features engaging, project-based activities in STEM, digital communications and other academic topics. All Learning Launcher activities utilize applied technology to reinforce academics and build 21st century skills. Many of the Learning Launchers include video tutorials, project worksheets, hyperlinks to rich internet content and other resources that in total help to support core academic content through hands-on exploration. Autonomy is a key element in all SmartLab curriculum. As learners progress from foundational engagements (Level 1) to more advanced engagements (Levels 2 & 3), Learning Launchers gradually offer more complex projects and greater opportunities for students to shape their own learning experience. With these multiple challenge levels, open-ended activities, and lots of “Extend Yourself” activities, Learning Launchers provide personalized learning for students of all abilities in grades 3-12.



The SmartLab LaunchPad™ navigation system makes it easy for students to choose the activities and challenge level that's right for them. There are currently over 300 Learning Launchers in 60 different content areas, organized into eight systems of technology:

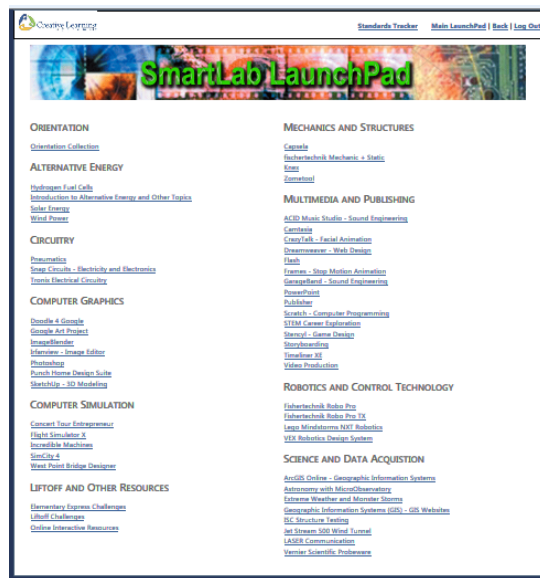
- Alternative Energy
- Circuitry
- Computer Graphics
- Digital Communications
- Mechanics and Structures
- Robotics and Control Technology
- Scientific Data and Analysis
- Software Engineering

The LaunchPad provides learners with an extensive array of choice to utilize applied technologies, explore academic content areas, and select challenge levels that are engaging, ability appropriate and personally relevant.

All of the Learning Launcher curriculum, online interactive resources and facilitator resources (including our electronic Standards Tracker) can be accessed from the online LaunchPad. This allows students, parents and educators to access SmartLab resources from anywhere. In addition, Learning Launcher licenses are school-wide, providing all educators with the opportunity to select and integrate appropriate project-based content into their lesson plans.

"The Learning Launchers make STEM understandable by breaking it down to the 'root'. Our SmartLab students have grasped engineering concepts that I never imagined possible."

Derek Seifried, SmartLab Facilitator, Brighton School District CO



Elementary Level Challenges

Creative Learning Systems' elementary level Learning Launchers guide project engagements and provide the core educational resources for elementary SmartLab experiences.

Liftoff Challenges feature project-based engagements for younger learners. Liftoff Challenges guide hands-on and computer-based project engagements with age appropriate projects and reading levels. While Liftoff Challenges are specifically targeted towards 4th and 5th grade learners, the content is not specifically identified as elementary curriculum. As a result, these learning engagements are also appropriate for many secondary school special education students. Liftoff Challenges are typically explored as project engagements of 5-7 class periods. Typically, students will rotate through a sequence of technology engagements with several teams of students working on the same Liftoff Challenge simultaneously.

Express Challenges feature shorter project engagements for the full spectrum of elementary grades. Express Challenges can be conducted as whole-class activities and are appropriate for lower grades or when school schedules make longer project engagements difficult.

Liftoff Challenges and Express Challenges provide engaging, hand-on, minds on learning opportunities for elementary age learners and offer schools flexible scheduling options. They provide foundational experiences in STEM/STEAM and give learners early experiences in project-planning, communication and collaboration. All elementary school challenges are designed to support and articulate with secondary level SmartLab curriculum.



ePortfolio

Creative Learning Systems provides every SmartLab with easily customizable ePortfolio templates and resources. Student ePortfolios may be hosted on Google Drive or other online educational hosting services enabling student and teacher access from any computer or mobile device. Alternatively, the ePortfolio system may be hosted on a local server within the SmartLab or school.

Engagement #01 >
Project Presentation #01

Sample Project Presentation: NXT

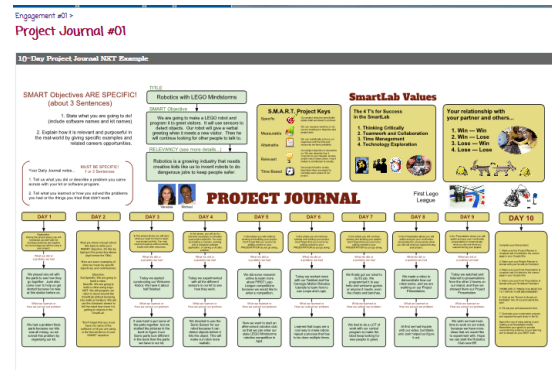
NXT Robotics: Loops and Logic with the Taskbot

By Vanessa d. St. Louis

Engagement #01 >
Self-Assessment #01

SmartLab Self-Assessment Rubric

SMART Objectives	1	2	3	4	5
SMART Objectives Your project objectives should be specific, measurable, achievable, relevant, and time-bound. They should be written in a way that is clear and concise, and they should be written in a way that is measurable and achievable.	5	4	3	2	1
Project Journal Your project journal should be a record of your project's progress. It should include a description of your project, a list of your project's objectives, a list of your project's tasks, a list of your project's results, and a list of your project's conclusions.	5	4	3	2	1
Project Presentation Your project presentation should be a clear and concise summary of your project. It should include a description of your project, a list of your project's objectives, a list of your project's tasks, a list of your project's results, and a list of your project's conclusions.	5	4	3	2	1
Project Management Your project management should be a clear and concise summary of your project's progress. It should include a description of your project, a list of your project's objectives, a list of your project's tasks, a list of your project's results, and a list of your project's conclusions.	5	4	3	2	1
Project Collaboration Your project collaboration should be a clear and concise summary of your project's progress. It should include a description of your project, a list of your project's objectives, a list of your project's tasks, a list of your project's results, and a list of your project's conclusions.	5	4	3	2	1
Project Reflection Your project reflection should be a clear and concise summary of your project's progress. It should include a description of your project, a list of your project's objectives, a list of your project's tasks, a list of your project's results, and a list of your project's conclusions.	5	4	3	2	1
TOTAL POINTS	25	20	15	10	5



The ePortfolio system is comprised of three main elements. The **Project Journal** allows students to document their daily project process. The Project Journal is where learners record their objectives and write daily reflections about what they've learned and problems they've solved. The **Project Presentation** is how learners document results of their project work and communicate what they've learned through each project engagement. Project Presentations may be created using PowerPoint, Google Presentation, video or graphic software, or any other digital media appropriate to their project.

The **Self-Assessment** provides an opportunity for learners to reflect and assess the quality of their objective, project work, presentation and collaboration skills, and identify specific areas for future improvement. Self-assessments also provide a foundation for SmartLab Facilitators to have meaningful discussions with students about areas where perceptions of performance differ. This innovative assessment system allows for authentic assessment of project-based, student centered learning.

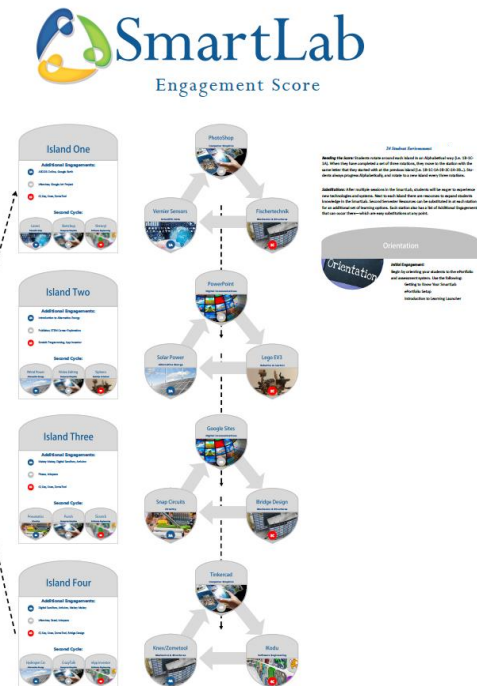
The SmartLab ePortfolio system provides a platform for learners to document, share and assess their work while building critical writing, presentation and digital communications skills. And the online hosting systems allow anytime, anywhere access to project work by both students and teachers.

The Learning Score™

Facilitator-support resources include a wall-sized flow chart called the Learning Score. The Score provides a map to guide teams of learners through an initiatory SmartLab program. The Score is made up of a number of “nodes,” each of which describes location in the SmartLab and the resources the team will need (such as Learning Launcher, software, construction kits, and so on) for a particular learning engagement.

Following the Score, each team of learners will take a different path through the SmartLab, while gaining exposure to each of the eight systems of technology, or core competencies, represented in the environment. In this manner, each team of students gains from a unique learning experience, while assuring a necessary level of predictability in individual learning and proficiency.

The Score is custom designed for each SmartLab based on class size, program length, academic focus, and the equipment and learning apparatus provided. It is developed in collaboration with each school and Facilitator professional development includes training on how the Score may be modified as the needs and resources of the SmartLab evolve.



Academic Standards

Creative Learning Systems curriculum is aligned to a wide range of national subject area standards, including the national common core standards, as well as a select group of state standards. Standards are accessed through a fully-interactive online database, allowing searches by standard, grade level, academic subject, Learning Launcher title and more.

These standards include:

- **Common Core Standards** for Mathematics
- **Common Core Standards** for English Language Arts
- **Science** - *National Science Education Standards*, The National Academy of Sciences
- **Mathematics** - *Principles and Standards for School Mathematics*, National Council of Teachers of Mathematics
- **Language Arts** - *Standards for the English Language Arts*, International Reading Association and the National Council of Teachers of English
- **Social Studies** - *Curriculum Standards for Social Studies*, National Council for the Social Studies
- **Technology** - *National Education Technology Standards for Students (NETS•S)*, International Society for Technology in Education (ISTE). *Standards for Technological Literacy: Content for the Study of Technology*, International Technology and Engineering Educators Association (ITEEA).

Standards Tracker Database

Creative Learning Systems **Standards Tracker™** is an interactive database that provides correlations between the SmartLab Learning Launcher curriculum and a wide array of national and state standards. Using our online Standards Tracker, SmartLab schools can easily align student project activities with academic standards.

The **Standards Tracker** provides correlations to **Common Core**, national and state standards in math, science, social studies, English language arts, and technology. The **interactive** features allow the standards database to be searched and sorted based on a variety of criteria including standard, subject, grade level, topic and Learning Launcher title.

STANDARDS TRACKER DATABASE

Search by Learning Launcher Title

Find curriculum standards that our Learning Launchers support.

Search by Curriculum Standard

Find Learning Launchers supporting a curriculum standard.




Standards Tracker Menu

New Search

LEARNING LAUNCHERS RELATED TO A SPECIFIC CURRICULUM STANDARD

SELECT A STATE OR NATIONAL STANDARD:

Common Core
National
Next Generation Science
Arizona
California
Colorado
Florida
Massachusetts
Nebraska
Nevada
Texas

STANDARDS TRACKER SEARCH TIPS

1. Select a state or national category to view a list of curriculum standards.
2. Select a curriculum standard to view a list of related Learning Launchers.
3. Click on a Learning Launcher title to view more details.
4. If you wish to select a different state or national category without having to start a new search, click on the appropriate button to make a different selection.

Adjunct Services

This section describes the services Creative Learning Systems provides with each SmartLab installed: facility planning, the installation itself, professional development, and customer support.

Facility Planning

Creative Learning Systems has a track record of successful working relationships with administrators, planning committees, architects, and builders. Our goal is the optimal design configuration for each specific physical setting. Supportive documentation includes customized floor plans along with guidelines for facility preparation, remodeling, and interior design.

Installation Services

Creative Learning Systems provides a team of certified installers to unpack and assemble all CLS-supplied furnishings and equipment.

The installation team also loads software, establishes the data networks, and brings the SmartLab into operating condition. Installation takes three - six days for each environment.

Professional Development

Facilitator training and professional development is included with this Targeted Price Estimate. Creative Learning Systems provides a total of four (4) days of on-site facilitator training and professional development services for the STEM environment, and six (6) days of on-site facilitator training and professional development services for the Communication Media Arts environment. This training and development program is intended for those educators who will be directly involved in the day-to-day activities in the SmartLab (including up to four educators designated as alternate SmartLab facilitators). Additional training may be purchased from Creative Learning Systems at or after the time of lab purchase for \$1,500 per day.

Scheduling of the on-site learning facilitation professional development sessions is subject to availability of training resources. Creative Learning Systems will determine the timing, length, and number of sessions used to deliver the ten (10) days of professional development services in consultation with school representatives.

Customer Support

CLS provides extensive technical and instructional support to all installations via our toll-free 800 number. Our facilitator support team telephone number in Longmont, Colorado is (800) 458-2887; the fax number is (303) 772-6422; and, <http://www.creativelearningsystems.com> is our website address.

Curriculum and Support Agreement

The SmartLab Curriculum and Support Agreement (CSA) is the most affordable way to protect your investment in STEM education for your school. The SmartLab CSA includes access to all the latest curriculum and classroom resources from Creative Learning Systems. It also provides essential ongoing support and professional development. The benefits of the Curriculum and Support Agreement include the following:

- ✓ Access to hosted Learning Launcher Curriculum including all available updates and additions
- ✓ Access to hosted Facilitator Resources including all available updates and additions
- ✓ Up to three days additional onsite professional development in the event of facilitator turnover
- ✓ Unlimited telephone and online technical & pedagogical support
- ✓ Discounted rate for onsite technical support and/or additional professional development
- ✓ Discounted tuition for future Advanced Facilitator Development Conference (AFDC)
- ✓ Up to \$1000 per year in enhancement and replacement parts from the SmartLab catalog

The CSA is a five year agreement that may be prepaid for multiple years at the time of the initial SmartLab purchase or billed annually. The price per year is locked-in once a five-year Curriculum and Support Agreement is signed and there are not penalties for termination.

Support Agreement – Student Broadcast Studio

The Student Broadcast Studio Support Agreement is the most affordable way to protect your investment in STEM education for your school. It provides essential ongoing support and professional development. The benefits of the Support Agreement include the following:

- ✓ Up to two days additional onsite professional development in the event of facilitator turnover
- ✓ Unlimited telephone and online technical & pedagogical support

Warranty

This section provides detailed information about the CLS warranty.

What's Covered?

CLS warrants the materials included with the SmartLab will be free from defects in material or workmanship for a period of one (1) year from the date of installation

During the warranty period CLS will replace, repair, or facilitate replacement, at its option, any defective equipment components or software.

During installation, our installers shall take all reasonable precautions to avoid injury and damage to property.

What's Not Covered?

CLS shall not be liable for acts of God, or of damages resulting from the use and/or service of the equipment including;

- Operation of the SmartLab outside of its environmental, electrical, or performance specifications, conditions, capabilities, or standards
- **Network/client viruses**
- Power fluctuation or failure
- Vandalism or any other damage or alteration of the SmartLab by persons other than CLS employees
- Combining incompatible products
- Damage, neglect, alteration, or any impairment of the SmartLab resulting from causes or conditions not associated with ordinary and intended storage, handling, installation, maintenance, service, or use

Warranty Conditions

We warranty *only those subsystems and components certified by CLS and delivered by CLS as a part of the SmartLab, or purchased by Customer as per CLS specifications*. We assume no responsibility or liability for equipment, software, subsystems, or components that you, the customer, modify, add, or substitute.

This warranty remains valid only if you, the customer, maintain the configuration of the SmartLab as it is originally designed, manufactured, and installed by CLS.

All warranties associated with the SmartLab shall become null and void in the event of any modification, addition, or substitution made without the prior written consent from Creative Learning Systems.

Post-warranty and extra-warranty support

Following the warranty period and for items outside of warranty coverage, CLS will provide, upon request of Customer and at CLS's pricing terms, maintenance service and maintenance parts for the SmartLab including on-site configuration. Whenever possible, CLS will facilitate third party low-cost service, repair, or replacement of items after the warranty period has passed.

Customer Responsibilities

At CLS, we pride ourselves on delivering a turnkey product. We install every bolt, bracket, and bookcase, and deliver all the software, hardware, kits, and apparatus that make up the lab you buy. We do, however, count on you, our customer, to do some preparation for us. This section details those expectations. The more familiar you are with this section, the smoother your installation will go.

Facility Preparation

CLS can only ensure on-schedule completion of the proposed project if the Customer has met all of our facility readiness requirements and computer equipment specifications PRIOR TO arrival of our installation crew.

Facility readiness requirements include:

- A **telecommunication line** at the facilitator's zones should be included as part of the facility preparation. The line will be used for voice calls to the CLS Customer Service toll-free (1-800) number.
- Installation of data network (see final plan view drawing)
- Electrical service (see final plan view drawing)
- Computer equipment and software (thirty-two client computers) as per CLS specifications.
- **Network Virus Protection**
- Removal of trash and debris

SmartLab Implementation Timeline

In the initial design and planning process of a SmartLab, we will create a **proposed timeline** of target dates and projected milestones so potential customers can clearly see the steps involved in implementing the program for your school and/or district wide initiative. We work backwards from the first day you would like classes to start in your SmartLab and anticipate the standard number of weeks it takes for order delivery, installation and training.

Delivery, installation, and training dates are reserved based on the order in which we receive purchase orders. We generally need to allow 8-12 weeks from the time your order is placed to the first day of installation. Installation is anticipated to occur over a consecutive three - five day period.

Our **installers will be onsite to receive all of the furniture and equipment** when it arrives. Installation also includes loading, configuration, and testing of all software programs. A brief orientation in regard to software installation procedures and the location of the original software media, manuals, and registration documents will be provided.

Following installation, Creative Learning Systems provides **four to five days of on-site technical and instructional training** by a CLS Facilitator Support Specialist. Our training sessions are always onsite and at a mutually agreed upon time, based on availability. Training days will be consecutive unless otherwise requested. Training will include instruction in the proper use of the SmartLab, operation and maintenance of equipment, management of resources, and effective utilization of the learning materials.

Pre-proposal steps:

- SmartLab first contact presentation for school and/or district administration.
- Subsequent presentations for additional staff, board members and other educational partners.
- Site visits are highly recommended & scheduled for anyone interested in a firsthand experience.
- Your CLS representative will then schedule a design meeting at your school to collect information, evaluate & measure space so a preliminary configuration & estimate can be prepared.
- Two to five days later a Targeted Price Estimate (TPE) is prepared, delivered and presented.
- We encourage a lot of discussion, review and revision of the proposed configuration.
- Subsequent versions are presented, until your TPE is converted into a final proposal; complete with payment terms and a final proposed timeline for you to review & approve.

From receipt of your purchase order:

- Week 1: The SmartLab proposal is accepted, a purchase order, signed contracts & deposit received.
- Week 2: The proposed Implementation Timeline is reviewed, finalized and materials are ordered.
- Week 10-12: Three to four day installation by trained CLS professionals.
- Week 13: Four to five days of onsite training by SmartLab Learning Environment Specialist.
- Week 14-30: A CLS Support Specialist maintains monthly contact with the SmartLab Lead Facilitator.
- Annually: CLS Advanced Facilitator Development Conference held every June
- Ongoing: A Curriculum & Support Agreement is in place to provide ongoing assistance & support.
Monthly Email Updates and PD Webinars provided on a regular basis for facilitators.

Typical Training Schedule

Although we tailor our facilitator training to the needs of each school, there are certain topics and experiences that are common to all. Extensive hands-on sessions are used throughout the training days with mind numbing technical stuff to keep everyone honest and smart! The training topics shown below are typical for a SmartLab environment.

Introductions and opening activities

Assess Facilitators' skills, experience, and goals

Fact finding:

- Expectations of CLS Training Session
- Models of SmartLab usage and scheduling
- Introduction to CLS Learning Philosophy
 - Project Based Learning
 - Constructivist Learning
 - Collaborative Learning

Tour of the Environment

Orientation to Creative Learning SmartLab Zones

Introduction to the Learning Environment Score™

Custom Score development

Introduction to Server Management

Orientation to Lab Components and Resources

Development of a cohesive management strategy

Hands-on Experiences

Introduction to, and hands-on experiences, with all interfaces

- Lego EV3 Mindstorms
- Vernier Science Sensors

Software Experiences

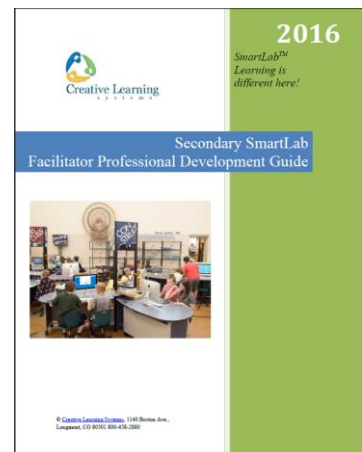
Planning for Learner Environment Management:

- Planning the Orientation
- Assessment Strategies
- Organization of Resources
- Inventory Control

Portfolio development & resource planning

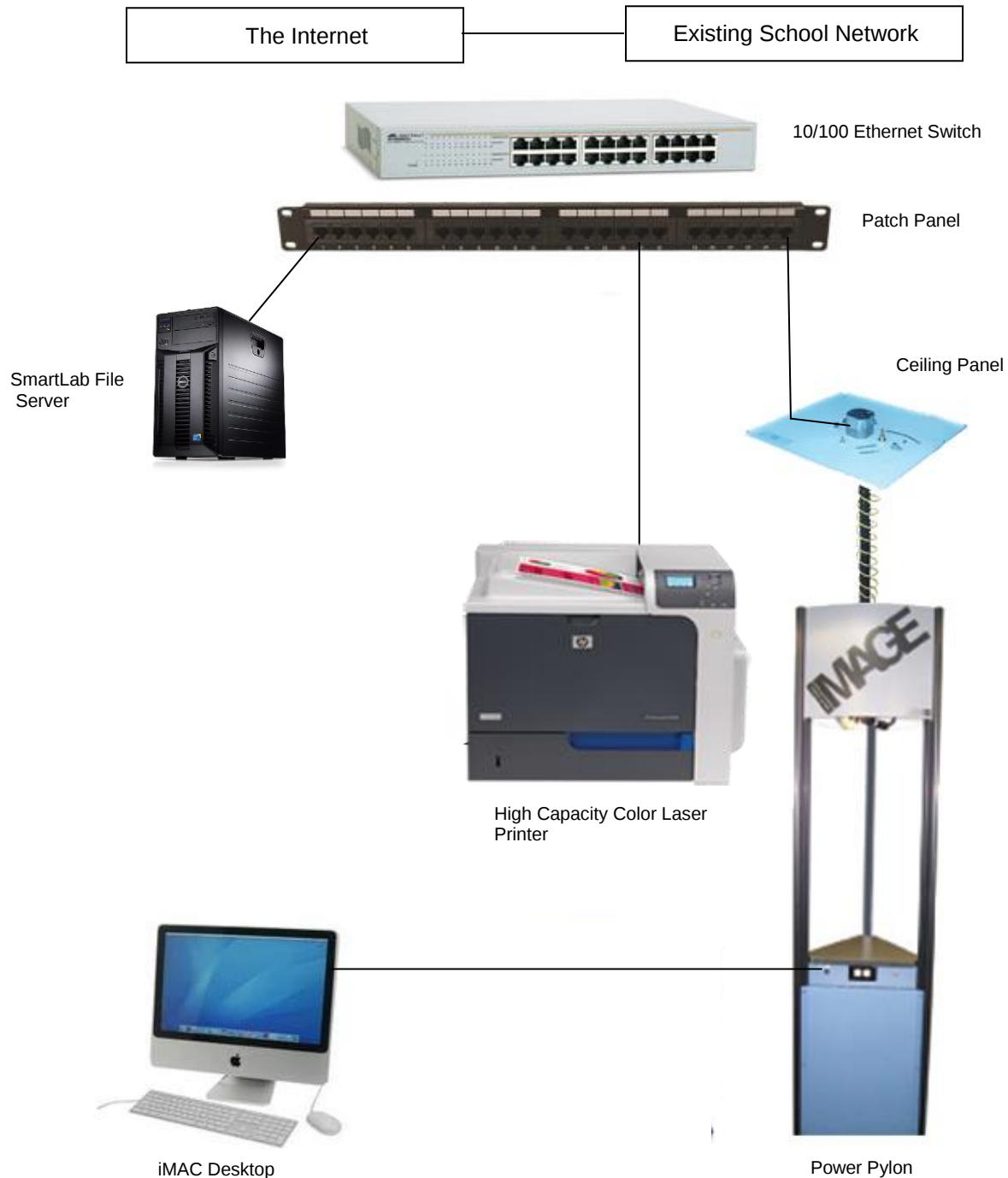
Professional Development Guide

Creative Learning Systems has established a comprehensive agenda for the professional development for each installed SmartLab. We have learned over the last 25 + years in business that making the facilitator(s) aware of the upcoming schedule and detail behind the schedule is advantageous to the ultimate success of the professional development. The guide also captures the majority of information delivered during the professional development; facilitators are able to refer back to the guide if they forget something down the road.



Network Information

Creative Learning Systems, we are committed to using network and computer equipment from only the most reputable manufacturers and integrating only those technologies that have proven themselves reliable in today's IT Industry. The diagram below shows the primary networking/computer components of a typical Creative Learning Environment installation. The following pages describe each component.



Patch Panel (Customer Supplied)

The patch panel is the central location to which the entire network wiring in the environment is connected. These are fixed connections, which mean that each wire in each cable (eight per cable) is “punched down” into terminal blocks. They are permanent.

Premise Wiring (Customer Supplied)

Premise wiring refers to all wiring and hardware components required to connect the network, from patch panel to pylon panel.

Rack (Customer Supplied)

The rack is where the patch panel and switch are mounted.

Pylon (CLS Supplied)

Each island has a central three-sided pylon, in which all services (network and power) are distributed to each station in the island, as needed. Network patch cables connect the bottom side of the ceiling drop to the top of the pylon. Network wiring then runs inside the service upright to the recessed panel. The network jacks reside in recessed panel; that’s where computers are plugged in.

Switch (Customer Supplied)

The Ethernet switch connects all of the individual network wires, allowing computer devices in the environment to communicate with each other. The switch is mounted next to the patch panel in the rack. Small patch cables connect individual network cables in the patch panel to ports on the switch. The switch contains an uplink port that allows customers to link the Learning Environment to their existing school network.

Lab Server (CLS supplied)

The server is the heart of the Learning Environment network. The stability, functionality, and supportability of the server is achieved with specific hardware components selected for those characteristics by CLS technicians. For that reason, it is the one computer in the lab that Creative Learning Systems always supplies.

The server’s features are described below.

Network Operating System

The server in a standard Creative Learning Environment uses the Windows 2012 Professional Server operating system, which has proven itself as function-rich, reliable, easy to maintain, and very conducive to cross-platform (Macs and PCs) networking.

File Storage and Security

All documents created by learners and facilitators are saved to and stored on the lab server in specially designated folders. Facilitators and administrators can secure these folders in any way they see fit.

System Administration and Recovery

Creative Learning Systems provisions the server with everything it needs to survive crashes with data intact.

- **Drive Redundancy:** Drive redundancy allows the server to continue running even if one of the hard drives crashes.
- **Drive Backup:** The server has a complete drive backup and restoration system that is effective and easy to maintain. It includes a 1 TB hard drive, and a pre-defined backup schedule.

- **Recovery Image:** After we install and customize the server for the Learning Environment (with specific printers, folder structure, and security model), our installers create an image of the server that can be used in the event of a crash to restore the server back to its known-working, post-installation state.
- **Web Serving:** Easy-to-maintain Web server software is built in to the server. It can be used with any of the Web-based content learners and facilitators create. In addition, Facilitators can create an Intranet for learner support materials and individual home pages, where learners can post portfolios and other content.
- **Remote Administration and Support:** Software and hardware components allow CLS support staff to access the server remotely over the Internet for customer initiated remote desktop sessions. For further details on how this works, contact the CLS support team.
- **Content:** The server is pre-configured with a rich supply of technical, facilitation, curricular, and environment-management support resources.

Client Computers (CLS or Customer supplied)

Client computers are the machines at each learning station. The client computers are powered and networked through jacks in the recessed panel of the pylon at each island or from the wall as specified on the electrical and data layers part of the plan view drawing (included with final proposal). Each station's software configuration provides specific functionality, which in turn provides the foundation for rich learning experiences.

Customers need to purchase the client computers as per the attached specifications.

- **Attachment B: Customer Purchased Computer Specifications and Requirements** - provides detailed specifications to follow when purchasing client computers. Specifications for all Apple based PCs can be found in this document

Printer (CLS supplied)

Standard lab configurations include a workgroup, high capacity color laser printer. The Printer is "network ready," meaning that the network line plugs into it directly so it doesn't have to be connected to the back of a computer.

Existing School Network and the Internet

CLS does not provide Internet connectivity. Most customers choose to connect the lab network through uplink ports to their existing school network to allow lab access to such network resources as Internet access. In a typical lab installation, the customer will provide a designated network port inside the lab that is directly connected to the school's primary network backbone.

All client computers are configured access the Internet, unless customers specifically request otherwise.

Network and computer configuration details, like naming conventions, IP addressing schemes, DNS server addresses, gateway/proxy server Addresses, etc., are coordinated between our installation team and the customer's on-site technology department representative.

Important Security Information!

It is very important to note that CLS does not provide hardware, software, or protection strategies with regard to Internet security. It is the responsibility of the customer to ensure the computer systems in the lab are properly protected against all Internet threats, including virus infection and malicious compromise. CLS recommends that the school's technology department implement the same virus and firewall protection strategies in the lab as it uses campus-wide.

Attachments

Attachment A:

Detailed List of SmartLab Deliverables

Attachment B:

Computer Specifications and Guidelines

Attachment C:

Learning Launcher/Liftoff Challenge Curriculum Description

Attachment D:

SmartLab Seating Options

Attachment E:

Color Consideration

Attachment F:

Preliminary Plan View Drawing