SPECIAL JOINT MEETING OF THE
CCSD BOARD OF TRUSTEES
AND THE
CARSON CITY BOARD OF SUPERVISORS
June 16, 2016
EXECUTIVE SUMMARY

LATE MATERIAL
MEETING DATE 6/16/16
ITEM # 34A, 34B, 34C & 34D

5. Informational Update and Discussion on the Carson City School District's Emergency Response Plan, with the Support from Carson City Departments

Ms. Ann Wiswell, Risk Manager, Carson City School District will provide an update on the Carson City School District's Emergency Response Plan, which includes the services and support from various Carson City departments.

6. Informational Update and Discussion about Projected Growth in the Region and its Potential Impact on Carson City and Carson City School District Operations

Mr. Plemmel and Mr. Feuling will discuss projected new residential construction and overall growth in the Carson City area over the coming years and then how that will translate into anticipated new students for the Carson City School District and efforts to meet the capacity needs for those students.

7. Informational Update and Discussion on the Mobile Maker Space Grant

Makerspace Defined: Makerspaces, sometimes also referred to as hackerspaces, hackspaces, and fablabs are creative DIY (Do it Yourself) spaces where people can gather to create, invent and learn. In libraries they often have 3D printers, software, electronics, craft and hardware supplies and tools, and more.

Makerspaces provide resources to encourage youth to engage with STEM subjects (science, technology, engineering and math). Libraries and makerspaces are a perfect complement to each other and DIY/makerspaces are finding their place in more and more libraries. The Institute of Museum and Library Services (IMLS) indicates libraries are … "part of a growing movement of hand-on, mentor-led learning environments to make and remake the physical and digital worlds. They foster experimentation, invention, creation, exploration, and STEM learning". (Institute of Museum and Library Services, 2012, para.1).

Carson City Library will introduce to the community a mobile makerspace to create a flexible learning place that can transform a variety of spaces into a hands-on learning environment. The project will bring an opportunity for collaborative and innovative learning that can be rolled out in conjunction with existing afterschool programs. The library will partner with the Boys and Girls Clubs of Western Nevada, Carson City Parks and Recreation Department after school Kids Klub and Carson City Juvenile Probation to provide youth with the opportunity to increase knowledge and enjoyment of science, technology, engineering and mathematics (STEM) activities through hands on STEM-based programming.

8. Informational Update and Discussion on the New Student Information System, Infinite Campus and the Plan to Provide Training for Students and Parents

The Nevada Department of Education has purchased a state edition of Infinite Campus and secured funding for the 15 districts in the state to move to Infinite Campus as their Student Information System. Clark County and Washoe County School Districts were already Infinite Campus users.

Information will be provided on the change of the Student Information System used by Carson City School District from PowerSchool to Infinite Campus. Information will highlight the changes that will be seen by parents and students. There will also be resources available to support and assist them in making the transition.

The Carson City Library will continue to support the Digitorium partnership with the Carson City School District by providing resources and training parents and students in Infinite Campus and other pillar applications such as Google Apps for Education. Trainings will be supported by Library staff and take place both at the Library as well as during Tech Café at the School District Professional Development Center.

(Rev 8-15)

Nevada State Library, Archives and Public Records

Institute of Museum and Library Services

LSTA APPLICATION - 2016

Due Friday, November 13, 2015

DUNs Number: 073787152	
1. Applicant Library Name Carson City Library	2. Principal Contact Person for this Grant Diane Baker
3. Address – Street, P.O. Box, Route 900 N. Roop Street	4. Telephone Area/Number 775-887-2244 x7554
5. City, State, Zip+4 Carson City, NV 89701-3101	6. E-mail address dbaker@clan.lib.nv.us
7. Library Director/Administrator Sena Loyd	8. Telephone Area/Number 775-887-2244
9. Address, Street, City, State, Zip+4 900 N. Roop Street, Carson City, NV 89701-3101	
10. Type of Library ☑ Public ☐ Academic ☐ Special ☐ Library Consortia ☐ School	
Project Title: Mobile Makerspace	
11. LSTA funds requested: 30,197.00	
12. Cash Contributions: 13,485.00	
13. In-Kind: 0.00	
14.Total Project Cost: 43,682.00	
15. Estimated number of person served **directly** by this project: 750	

Project Summary Brief description of what is to be done, for whom and anticipated impact.

Makerspaces provide resources to encourage youth to engage with STEM subjects (science, technology, engineering and math). Libraries and makerspaces are a perfect complement to each other and DIY/Makerspaces are finding their place in more and more libraries. The Institute of Museum and Library Services (IMLS) indicates libraries are ..."part of a growing movement of hands-on, mentor-led learning environments to make and remake the physical and digital worlds. They foster experimentation, invention, creation, exploration, and STEM learning" (Institute of Museum and Library Services, 2012, para.1).

Carson City Library proposes a mobile makerspace to create a flexible learning place that can transform a variety of spaces into a hands-on learning environment. The project will bring an opportunity for collaborative and innovative learning that can be rolled out in conjunction with existing afterschool programs. The library will work with the Boys and Girls Club of Carson City, Carson City Parks and Recreation Department afterschool Kid's Club and Carson City Juvenile Probation to provide youth with the opportunity to increase knowledge and enjoyment of Science, Technology, Engineering and Math (STEM) activities through STEM-based programming.

LSTA Plan for Nevada Goals (choose one)

☐ Goal I: Strengthen Nevada libraries' ability to effectively respond to community needs through assessment, planning and training.
☐ Goal II: Encourage Nevada libraries to develop and use partnerships and collaboration to maximize user resources and services throughout the state.
■ Goal III: Nevada libraries will provide responsive learning environments for Nevada residents
☐ Goal IV: Building capacity of libraries to meet user identified access needs

Project Intent (choose one)

Institutional Capacity
- ☐ Improve the library workforce
- ☐ Improve the library's physical and technology infrastructure
- ☐ Improve the library's operations

Information Access
- ☐ Improve users' ability to discover information
- ☐ Improve users' ability to obtain information resources

Lifelong Learning
- ☐ Improve users' formal education
- ■ Improve users' general knowledge and skills

Human Services
- ☐ Improve users' ability to apply information that furthers their personal or household finances
- ☐ Improve users' ability to apply information that furthers their personal or family health & wellness
- ☐ Improve users' ability to apply information that furthers their parenting and family skills

Employment & Economic Development
- ☐ Improve users' ability use resources and apply information for employment support
- ☐ Improve users' ability to use and apply business resources

Civic Engagement
- ☐ Improve users' ability to participate in their community
- ☐ Improve users' ability to participate in community conversation around topics of concern

Primary Audience

Select all that apply			
	All Ages		Urban
	Pre-School Children	X	Suburban
X	School Age Children		Rural
X	Young Adults & Teens		Statewide Public
	Adults		
	Seniors		

Select all that apply			
	Families		Limited English Speaking Persons
	Immigrants		Limited Functional Literacy Persons
	Intergenerational (not families)	X	Low Income
	Library Staff/Volunteers/Trustees		People with Disabilities

Partnerships

Planning to partner with another library, group or organizations? Yes ☐ No ■
(Attached letters confirming partners to the application)

Project Need

Target Population: Briefly describe the target population(s) to be served by this project.

Carson City has a population of 53,821, and 3,769 age 5 -9 and 3,550 age 10- 14 according to the 2014 estimate from the Nevada State Demographer http://nvdemography.org/.

The Mobile Makerspace will target the youth at after-school programs in Carson City via the Boys and Girls Club of Carson City and the Kid's Klub. The primary focus will be K - 5 children. Several of the project locations serve families that struggle with poverty, high unemployment rates, and other socioeconomic indicators.

Youth in after-school programs represent an important group to reach with STEM educational opportunities. The Boys and Girls Club of Carson City currently has 1,015 youth (age 5 - 17). The club's membership is comprised of 67% children from low-to-moderate income families (with just under 20% at below the 30% threshold of area media income) as documented by the Club membership applications. It is vital to reach children from low income families to support their access to innovative and collaborative learning opportunities.

Likewise, the Kid's Klub of the Carson City Parks and Recreation Department also serves youth from low income families. There are currently 257 enrolled in the K-5 level programs. Free and reduced lunch percentages from the elementary schools are an indicator for low income.

The library will also schedule several program stops at Carson City's Youth Probation Facility. The program will reach out to the high risk youth with select projects pre-approved by the facility staff.

Need: Briefly describe the identifiable need, problem, idea or opportunity for this project.

Understanding Science, Technology, Engineering and Math (STEM) has been identified as critical to move our economy forward. The importance of STEM has been affirmed by the President, emphasized by the US Department of Education, acknowledged by business leader and been incorporated in school standards.

Early interest, motivation and engagement, not necessarily proficiency, has been identified as a predictor in determining whether a student chooses to pursue a STEM career (Peterson, T.K. (2013). "The Importance of and New Opportunities for Leveraging After-school and Summer Learning and School-Community Partnerships for Student Success." Expanding Minds and Opportunities. Washington, DC). Based on this factor, K-5 is the primary target of the project.

Many of the youth at the afterschool programs do not have the opportunity to visit the library for materials or programming. Reaching beyond the walls of the library, provides a chance to reach many that cannot be regular library users.

And since learning does not stop when school is out, the educational experiences offered through maker and DIY type projects brought to after-school programs will allow students to learn new skills that are linked to STEM curriculum and mapped to the Common Core standards.

Evidence of Need: List supporting information and statistics to support the stated need.

The US Department of Education states "All young people should be prepared to think deeply and to think well so that they have the chance to become the innovators, educators, researchers and leaders....". Considering 80% of learning opportunities happen outside the classroom, after-school STEM programming is an important method to reach students. And to prepare for 21st century careers, youth need access to the "excitement, interest, and motivation" for STEM and STEAM that may be not be available in the regular classroom experience. Developing a connection to STEM has a direct connection for youth finding jobs and enrolling in college". (New Dir Youth Dev. 2013 Winter;2013(140):9-29. doi: 10.1002/yd.20076)

By moving beyond the library building, the project can reach disadvantaged and low-income students participating in the after-school programs, that would otherwise have limited or no regular access to the public library. The free and reduced lunch program is an indicator of the low-income demographic of the youth for Carson City elementary schools:

Borderwich-Bray	56.57%	Mark-Twain	70.53%
Empire	80.87%	Seeliger	41.89%
Freemont	60.56%		
Fritsch	41.64%		

(from Nevada Schools Free and Reduced Lunch Data, 2014-15. NV Department of Education)

Connection to planning documents: List 1) one LSTA State Plan goal and 2) the goal and/or objective from the library's planning document. Other relevant planning documents may also be cited.

This project directly aligns with Goal III of Nevada's LSTA State Plan: Nevada libraries will provide responsive learning environments for Nevada residents.

The Carson City Strategic Plan, Level Up! 2014-2019, has multiple sections that connect and support the Mobile Makerspace project. The primary goals and priorities from the plan are:

STRATEGIC GOAL #1:
The Carson City Library will inspire learning.
Priority: Programming to inspire learning

STRATEGIC GOAL #2:
The Carson City Library will facilitate connection.
Priority: Programming to facilitate connection

Project Activities & Description

Activity Information: (choose one activity and one mode)

- [x] Instruction
  - [x] Program – Formal interaction and active user engagement
  - [ ] Presentation – Formal interaction and passive user engagement
  - [ ] Consultation – Informal instruction with an individual or small group
- [ ] Content
  - [ ] Acquisition – Selection, ordering and receiving materials for library/archival collections
  - [ ] Creation – Design or production of an information tool or resource
  - [ ] Description – Apply standardized descriptive information to items or groups of items
  - [ ] Lending – Provision of library's resources and collection through circulation/electronic delivery
  - [ ] Preservation – Effort that extends the life or use life of items or entities
- [ ] Planning & Evaluation
  - [ ] Retrospective – research that involves historical assessments
  - [ ] Prospective – research that projects/forecasts future conditions
- [ ] Procurement

Project Description: Provide the details of the project. Focus on what the library will do during the project year.

The Carson City Mobile Maker-space project is designed to provide innovative and collaborative learning opportunities to youth in after-school programs. Maker-space hardware and software will provide exposure to equipment that will build technical skills. The opportunities created to explore these technologies will also reinforce and enhance STEM learning. Working with established after-school programs is a critical connection to ensure reaching the target youth groups.

Youth staff of the library have developed DIY and Maker-space programming - these have been met with enthusiasm by those who have been to come to the library. But with this project, the library will go beyond its walls to reach youth where they are in after-school and bring maker learning experiences to them.

The project will create six Makerboxes, each containing the information, tools and materials required for a hands-on learning program. Instructions with each Makerbox will detail a variety of potential programs, including variations for different age levels. The preset lessons are mapped to STEM learning objectives and the related Common Core standards. The six boxes are:

#1 3D design
#2 StopGap Animation
#3 Raspberry Pi/coding
#4 Makey Makey
#5 Prototyping/Laser design
#6 Strawbees/Geostix.

The initial program for all groups is required safety lesson and group behavior and related expectation instruction.

Instruction will be carried out by a part-time makerspace trainer with the assistance of a team of interns recruited from the high school through the Teen Leadership Council. The Council has grown out of the connection between the high school and the library's Digitorium project.

Project Description (con't):

Project timeline overview:

A. Preparation (months 1 - 4)
The project will begin by finalizing the acquisition of the surpluss van from the city. The interior will be fitted with storage components for the maker boxes, MacAir laptops with components, 3D printer and Laser-cutter. Vehicle measured for the van wrap - the wrap will have an eye catching tech design that also features the logo of the Institute of Museum and Library Services.

Outreach to partner after-school programs is planned prior to the end of the school year (May - June) to review expected enrollment and set up the preliminary Mobile Makerspace schedule.

The components for the Mobile makerspace and the project laptops will be purchased. Each box contains materials, an informational guide and precise directions in order to successfully put on programs. Project consumables will be purchased and be restocked into each box as needed.

The library will recruit and hire part-time makerspace trainer. This position will be part of the library's match for the project. The teen interns will be recruited through the Teen Leadership Council at Carson High School. Training for the interns will be coordinated by the project director and makerspace trainer.

Lesson plans and other instructional materials will be reviewed and evaluation sheets and surveys will be prepared. These will be included in each box and survey materials will be replenished as needed.

B. Roll-out (months 4 - 12)
The roll out of the Mobile Makerspace is slated to coincide with the start of the school year (2016-17) and the after-school programs. The Mobile Makerspace schedule will be reviewed with partners prior to the start of the school year. The project director and trainer will assess the schedule periodically.

The Mobile Makerspace will have 2-3 training stops each week school is in session, Tuesday through Thursday are the expected days for onsite afterschool programming. Each training session will range from 1 - 1/2 hours and can have 15-20 students in the session.

The program will reach out to the high risk youth with select projects pre-approved by the facility staff. These programs will be handled by the trainer and project director only (no interns).

C. Promotion and Evaluation (ongoing)
To highlight the Mobile Makerspace program and its successes the Carson City Library will create publicity information for the local newspaper, the library's website and social media platforms and for release to professional publications and listservs.

Evaluation of the project is ongoing. The evaluation sheets and materials will be a part of the programs and will be reviewed by the makerspace trainer and the project director on a monthly basis to start and move to bi-monthly review.

Evaluation

Project Outputs: Measures of services and/or products to be created or provided.

It is important for the Mobile Makerspace to inspire learning and enhance the interests in STEM fields for the youth of the community. To that end, the evaluation will focus on measuring the success of the Mobile Makerspace in quantitative and qualitative measures.

Proposed outputs for the project:

- number of workshops and trainings (project events) hosted by the Mobile Makerspace
- number Mobile Makerspace stops = minimum of 2 per week during the school year
- number of youth participating in each project event. Goal = 1,200 unique participants
- number of projects completed in the Library Makerspace
- any new Carson City library card sign-ups related to Mobile Makerspace events - 50 new library cardholders expected.

Project Outcome: Describe the measurable outcome

Each project will conclude with an exit slip to survey designed to be age appropriate for the students at each stop. With the older students, a few additional questions will be added to mine the depth of the impact of the programs on the youth. Anecdotal information will also be recorded.

Proposed Outcomes via survey:

- 65 % of youth surveyed will report they would participate in another STEM program.
- 50 % of youth surveyed will report an increased interest in pursuing STEM careers or fields of study.

Budget (See application instructions for additional information). Clearly identify amounts requested and from which funding source.

Budget Category	LSTA	Local Cash	In-Kind	Total
Salaries/Wages/Benefits				
Makerspace trainer - part time	7,371.00	0.00		7,371.00
				0.00
				0.00
				0.00
				0.00
Sub-total	7,371.00	0.00	0.00	7,371.00

Description:

Temporary part-time trainer position 756 hours @ 9.75 = $ 7,371
18 hours per week for 42 weeks

Equipment ($ 5,000 or more per item)	LSTA	Local Cash	In-Kind	Sub-Total
Van				0.00
				0.00
				0.00
Sub-total	0.00	0.00	0.00	0.00

Description:

Mobile makerspace van will be a surplussed vehicle provided by the City. No charge to the grant.

Operating: Travel	LSTA	Local Cash	In-Kind	Sub-Total
				0.00
				0.00
				0.00
				0.00
				0.00
				0.00
Sub-total	0.00	0.00	0.00	0.00

Description:

Operating: Consultant Fees	LSTA	Local Cash	In-Kind	Sub-Total
				0.00
				0.00
				0.00
				0.00
Sub-total	0.00	0.00	0.00	0.00

Description:

Operating: Supplies/Other	LSTA	Local Cash	In-Kind	Sub-Total
Makerbot 3D printer	0.00	0.00	0.00	0.00
3D Design Makerbox	2,550.00			2,550.00
StopGap Animation Makerbox	2,454.00			2,454.00
Raspberry Pi Makerbox	3,360.00			3,360.00
MakeyMakey Makerbox	1,404.00			1,404.00
Prototyping/Laser design	3,718.00			3,718.00
Strawbees/Geostix	1,440.00			1,440.00
Makerbox tubs	120.00			120.00
				0.00
Sub-total	15,046.00	0.00	0.00	15,046.00

Description:

See attachments for makerbox detail. Makerbox tubs 6 @ $20 = $120
3D printer will be acquired by library prior to the grant timeframe.

Operating: Supplies/Other	LSTA	Local Cash	In-Kind	Sub-Total
MacBook Air laptops - 15		13,485.00		13,485.00
MacBook Air Protection and K9 Webfilter	2,550.00			2,550.00
Wifi Connection - Verizon	480.00			480.00
Van wrap and van preparation	4,750.00			4,750.00
Sub-total	7,780.00	13,485.00	0.00	21,265.00

Description:

MacBook Air Laptops - 15 @ $899 = $13,485 funded by Friends of the Library
MacBook Air Protection and K9 WebProtection= 15 @ $170 = $ 2,550
Wifi Connection - 12 hotspots @ $40 = $ 480.00
Van wrap estimate (final cost based on exact van dimensions) = $ 2,500.
Interior van prep with shelves and equipment bay = $ 2,250

Operating: Contracted Services	LSTA	Local Cash	In-Kind	Sub-Total
				0.00
				0.00
				0.00
				0.00
Sub-total	0.00	0.00	0.00	0.00

Description:

	LSTA	Local Cash	In-Kind	Project Total
PROJECT TOTAL (will include Indirect Costs)	30,197.00	13,485.00	0.00	43,682.00
Indirect Cost Rate Requested % Indirect Cost	0.00			

Choose One:

☑ No Indirect ☐ Federally negotiated indirect cost rate* ☐ Indirect proposed cost rate for review (up to 10%)*

*attach supporting documentation

Comment:

Timeline:

Use real dates and date ranges as much as possible. Include major project activities and enter the name or position title of the staff responsible for each item. Insert additional rows in the table as needed. You may add additional text on activities on a second page.

Implementation activities	Date(s)	Person/position responsible
Van acquisition from city, interior prep	July 2016	Project Director
Van wrap	July 2016	Project Director
Meetings with afterschool partners	July 2016	Project Director
Purchase Makerspace box components	July/Aug 2016	Project Director & trainer
Purchase laptops and software	July/Aug 2016	Project Director & trainer
Assemble Makerspace boxes	August 2016	Project Director & trainer
Recruit for Makerspace trainer	July 2016	Project Director
Recruit teen mentors	August 2016	Trainer & Project Director
Finalize lesson plans, evaluation materials	July/Aug 2016	Project Director
Mobile Makerspace visits begin	late Aug 2016	Trainer & Project Director
Teen mentors trained and added to team	Sept 2016	Trainer & project director
Ongoing Makerspace afterschool visits	weekly	Trainer & teen mentors
Makerspace vists wrap-up	June 2017	
Promotional activities	**Date(s)**	**Staff name/position responsible**
Initial grant announcemnet - multiple outlets	Jun/July 2016	Project Director
Feature reports on Mobile Makerspace	quarterly	Project Director & trainer
Evaluation activities	**Date(s)**	**Staff name/position responsible**
Statistics sheets/evaluation surveys in boxes	August 2016	Project Director & trainer- D. Bakr
Compile statistic and survey responses	weekly	Makerspace trainer
Review & evaluate statistics/surveys	monthly	Project director & trainer
Six month report	Jan 2017	Project Director
Final report preparation	Aug-Sep '17	Project Director
Reports	**Date(s)**	**Staff name/position responsible**
Six month report	**January 13, 2017**	Project Direct/Diane Baker
Final report	**October 3, 2017**	Project Director/Diane Baker

WE, THE UNDERSIGNED, CERTIFY that this 2016 LSTA project application will be the basis for the operation and administration of the project for which LSTA funds are requested. We will provide expenditure and other reports and will comply with such fiscal provisions as the Nevada State Library, Archives and Public Records requires.
*>An application with original signatures **must** be submitted.*

Signature of President, Board of Trustees/School Board ▼	Date Signed 11/13/2015
Signature of Library Director/School Administrator ▼	Date Signed 11/13/2015
Signature of Project Director ▼	Date Signed 11/13/2015

Equipment/Materials Information

Box #1 3D Design

	Amount	Cost	Total
3D Printer -Makerbot	1	$0.00	$0.00
Makerbot Filament	50	$48.00	$2,400.00
Tinkerspace	15	$0.00	$0.00
Makerbot Print Head	1	$150.00	$150.00
			$2,550.00

Obtained by library through special Makerbot promotion

Box #2 Stop Gap Annimation

	Amount	Cost	Total
Portable Green Scree	1	$0.00	$0.00
Table Top Green Scre	4	$50.00	$200.00
Go Pros	4	$150.00	$600.00
32 GB SD Card	4	$39.99	$159.96
Flex Table Tripods	4	$15.00	$60.00
* Sets Objects	4	$200.00	$800.00
StopMotion Pro	4	$158.50	$634.00
			$2,453.96

Box #3 Raspberry Pi

	Amount	Cost	Total
Raspberry Pi Kit	15	$130.00	$1,950.00
375 Piece Resistor Kit	30	$9.99	$299.70
300 Piece LED Diodes	30	$12.99	$389.70
Female to Female Cli	15	$5.00	$75.00
Raspberry Pi Sense H/	15	$34.99	$524.85
Pi Cobbler	15	$7.99	$119.85
			$3,359.10

Box #4 MakeyMakey

	Amount	Cost	Total
MakeyMakey	20	$49.99	$999.80
50 Piece alligator clip	3	$19.99	$59.97
100 wire segment	3	$25.99	$77.97
Play-doh mega cans	8	$24.99	$199.92
Cutters/Roller	8	$8.25	$66.00
			$1,403.66

Box #5 Prototyping/LaserCutter

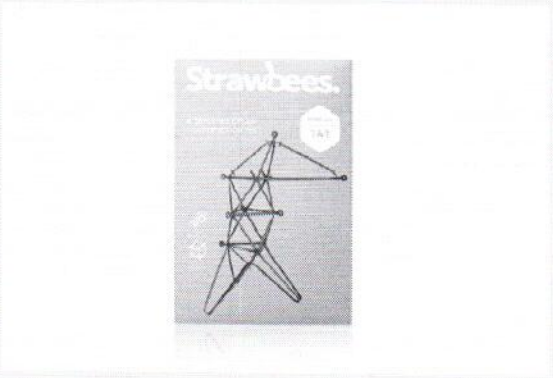
	Amount	Cost	Total
GloForge LaserCutter	1	$2,995.00	$2,995.00
11x17 whtie card stocl	3	$36.00	$108.00
Magnet Sheets - 5 pk	75	$9.30	$697.50
Disposible safety gogg	100	$1.50	$150.00
			$3,950.50

Box #6 Strawbees/GeoStix

	Amount	Cost	Total
Strawbees kit	50	$19.99	$999.50
GeoSitx	50	$7.75	$387.50
Straws - 50 count	30	$1.75	$52.50
			$1,439.50

Strawbees

Home / Shop / Maker Kit



Maker Kit

$20.0

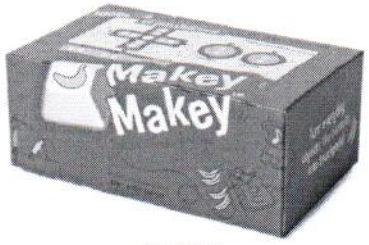
The Maker kit is our try it out kit, with **141 connectors** in two random colours, and sample straws. Perfect for testing Strawbees and to build a bridge, your own umbrella or just a random creature. We promise fun and a "I want more pieces"-feeling.

1 Add to cart

Description

Log in | Create an account | 0 items | Check out

MAKEY SHOP



Simple Box

Makey Makey Classic

Simple Box

$49.95 USD

Add to Cart

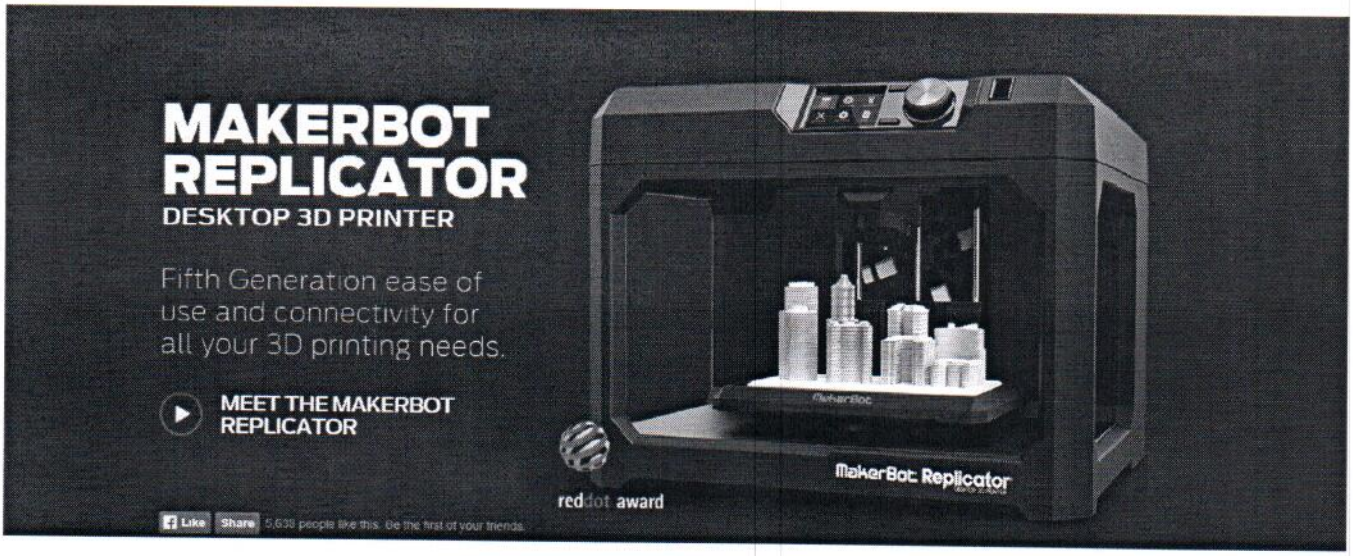
In-stock now!

Description:
Makes STEM Education fun! Start out easy with a banana piano. First setup takes seconds. Then make game controllers, musical instruments, and inventions. Advance to female headers and multi-key remapping up to 18 keys. Ages 8 to infinity.

Contents:
Makey Makey Board, USB Cable, 7 Alligator Clips, 6 Connector Wires, Instructions with Visual Project Start Guide, Online Documentation, and 20 Color Stickers. Be stoked! The Giftable Collector's Edition (available in drop down menu) also comes with collector's tin and in a large retail box.

MaKey MaKey - An Invention Kit for Everyone

3D Printer – no charge to grant



LaserCutter

Glowforge Tech Specs

THREE MODELS TO CHOOSE FROM

Glowforge Pro with Air Filter
$4,795

Our Pro model is designed for frequent, shared use, like a makerspace. It comes with upgraded optics, tube, and cooling. The passthrough lets you use long materials but requires additional safety precautions. Includes an Air Filter.

Glowforge Basic w/ Air Filter
$2,995

Adding the recommended Glowforge Air Filter lets you run your Glowforge anywhere without venting.

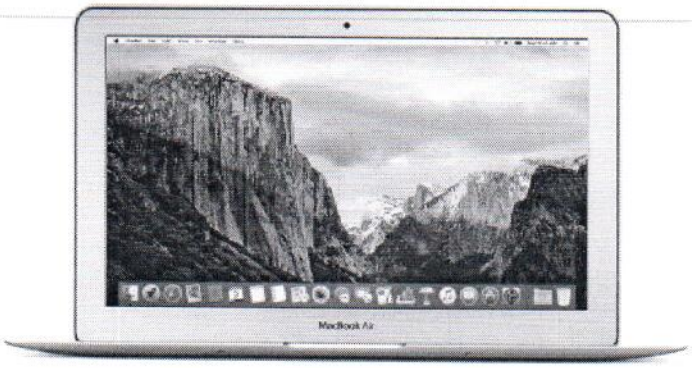
Glowforge Basic
$2,395

Our standard model can create everything shown on the Glowforge home page and is perfect for home, hobby, or occasional shop use. It needs ventilation via the provided 4" diameter (10.2cm) hose. We recommend putting the hose out a window.

What's an Air Filter and who should buy one?

Lasers normally require some ventilation via a small tube out a nearby window. Our optional Air Filter that sits under Glowforge and ventilates using hepa filters and charcoal, meaning no outside ventilation is required.

MacBook Air



View gallery

11-inch MacBook Air

① Choose Processor

Which processor is right for you?

- 1.6GHz Dual-Core Intel Core i5, Turbo Boost up to 2.7GHz
- 2.2GHz Dual-Core Intel Core i7, Turbo Boost up to 3.2GHz + $150.00

② Choose Memory

How much memory is right for you?

- 4GB 1600MHz LPDDR3 SDRAM
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Summary

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Intel HD Graphics 6000

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128GB PCIe-based Flash Storage

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Sample lesson plans

Makey Makey

ELA Logic Puzzles Lesson Plan

Appropriate for grade levels ES to HS

With just a little programming instruction, your students will be able to incorporate real life objects with rhyming riddles to construct a logic puzzle in Scratch.

Lesson Objectives

- Teach the literacy of coding with drag and drop programming
- Use "when block" to create logical sequence and program keys
- Create logical expressions to work with Makey Makey and conductive materials
- Use pen tool to draw geometric patterns in Scratch
- Craft riddles and rhyme schemes to create a logic puzzle

- Write a logical sequence of events for Scratch game

Lesson Materials

- Makey Makey for each student or partner groups
- Alligator Clips
- Assortment of conductive materials (metal objects, marshmallows, water, etc)
- Scratch account

- The example Scratch Game - https://scratch.mit.edu/projects/24096517/Storyboard game and revise for most logical sequence

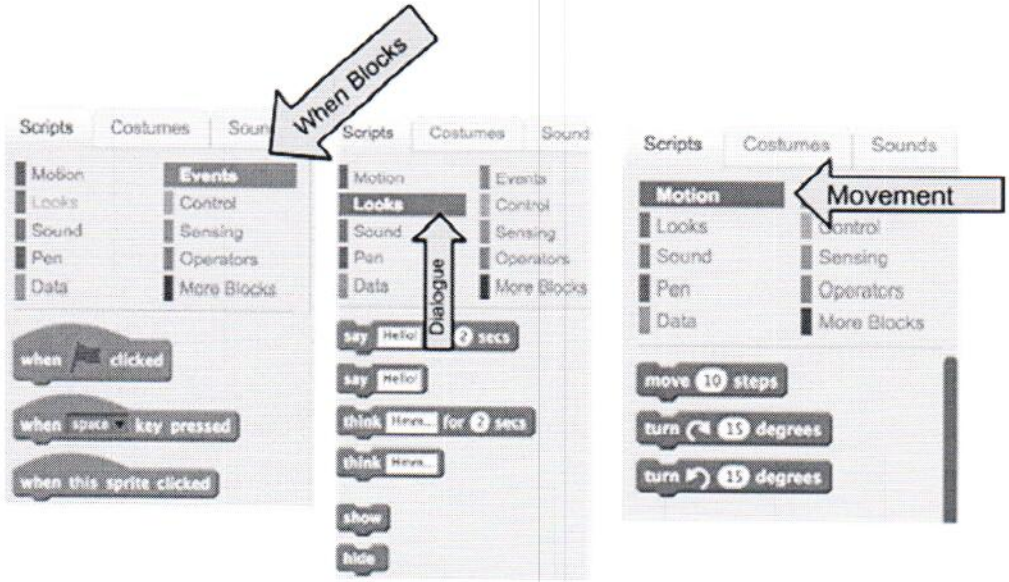
Scratch Lesson

Students will learn to program keys for a Sprite (character in game) and create dialogue for the Sprite.

1. Sign into Scratch.

   Familiarize students with the Scratch work area.

3. Familiarize student with the Scripts (Blocks) for today's lesson.



4. Pick a Sprite and a backdrop to get started.

5. When Block- All games need to start somewhere, and the first thing you need to do is program your game to start by dragging a "When (Green Flag) Block" to your "Scripts" area for your main Sprite.

6. Looks Block- Next you need to program your Sprite to speak. Click on the purple "Looks" in the Scripts area to find a "say Hello! block." Change "hello" to a funny riddle. Drag the purple block to your "When (Flag) clicked" until it clicks together. You can click on your script to run it and see how it functions.

7. To draw geometric shapes, you'll use the Pen tool.

8. If you create multiple levels or use multiple sprites, you'll have to program your sprite to "show." You also want to drag a blue "go to x: y:" block so that your sprite always starts in the same place.

1. Coding Logic- Small bits of code that can create complex games
    - If/Then Statements - Great explanation and writing lesson here.
    - Repeat Block - Put scripts inside the repeat block that you want to loop multiple times. (This is how I had the butterfly draw a flower in my game. However you can also use this to create motion, etc.)

ELA Lesson - Putting Coding and Writing Together

Teach students about writing riddles as poetry and emphasize the importance of sequence in writing your own game.

- Read Write Think lesson "Teaching Poetry Through Riddles."

My example riddles:

"I bend and fold, so your chips won't get old" (chip clip)

"I'm feeling so low, can you make a flower grow?" (touch water)

"You might try with your fist to beat down the door, but just a simple twist is all it takes, to lead you to a new floor." (key)

Resources:

Storyboard from Goochland County Public Schools. Visit their site for planning, lessons, and great ideas on utilizing Scratch in the classroom!

Marji, Majed. Learn to Program with Scratch: A Visual Introduction to Programming with Games, Art, Science, and Math. , 2014. Print.

Walter, John Paul. "What Am I? Teaching Poetry through Riddles - ReadWriteThink."Readwritethink.org. NCTE. Web.

Standards

Note on Standards

These lessons were developed with the idea that teachers all over the globe and a variety of grade levels could hack the lesson plan to meet their students' needs. Therefore, these are just some of the standards the lessons are based on, and not an all-inclusive list. Many of the CCSS align by grade level, so if you teach 9th grade, you could find the stair-stepped standard for CCSS.ELA-LITERACY.W.8.6 by looking at CCSS.ELA-LITERACY.W.9-10.6.

Common Core

CCSS.ELA-LITERACY.RL.2.4: Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.

CCSS.ELA-LITERACY.SL.6.5: Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

CCSS.ELA-LITERACY.W.7.3: Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.

CCSS.ELA-LITERACY.W.7.3.A: Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.

CCSS.ELA-LITERACY.W.7.3.B: Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.

CCSS.ELA-LITERACY.WHST.11-12.2: Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

NGSS

3-PS2-3: Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

4-PS3-2: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

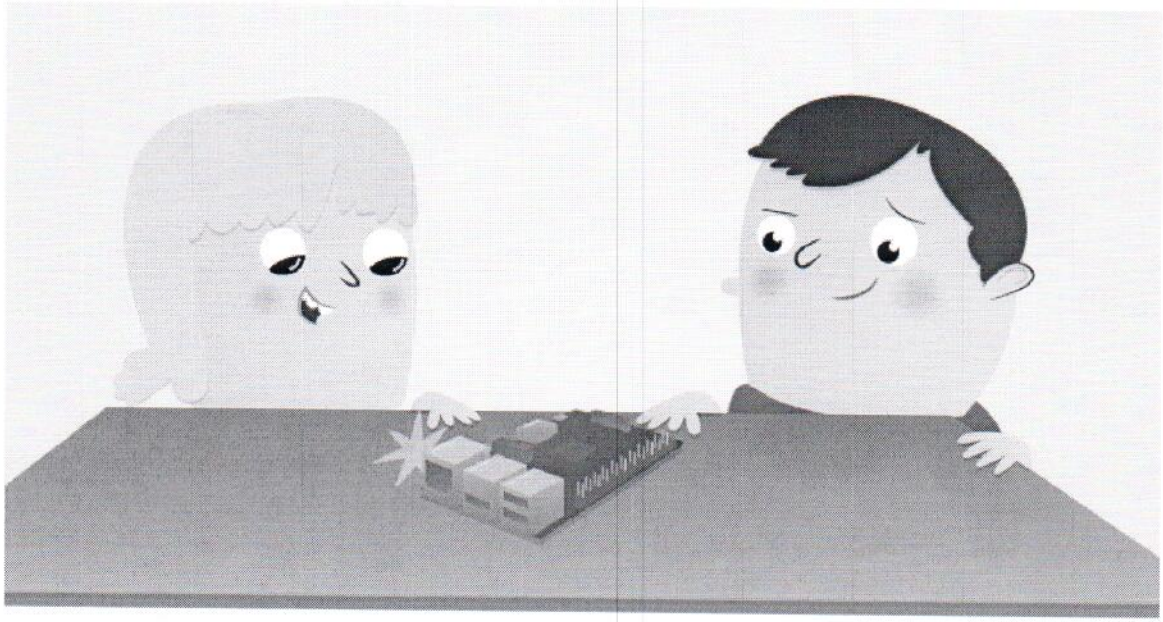
HS-PS3-1: Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

HS-PS3-3: Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

Raspberry Pi Learning Resources

Teach / Learn / Make

GETTING STARTED WITH RASPBERRY PI LESSON



OVERVIEW

This lesson has been designed as an introduction to the Raspberry Pi. It could be taught as a standalone lesson, as a workshop, or as part of a wider scheme of work to introduce students to Raspberry Pi and explain its main features and setup.

WHAT STUDENTS WILL LEARN

In this lesson, students will learn

- What a Raspberry Pi is
- Its main features
- How to set up and use one

KS2 PROGRAMME OF STUDY

- Recognise that a range of digital devices can be considered to be a computer. Recognise and can use a range of input and output devices.

KS3 PROGRAMME OF STUDY

- Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.
- Recognise and understand the function of the main internal parts of basic computer architecture.

WHAT YOU WILL NEED

SEE THE LESSONS

LESSON 1 - GETTING STARTED WITH RASPBERRY PI

The Raspberry Pi is a tiny computer smaller than a pack of cards, which can transform the way we perceive and approach computation. In this lesson we will introduce the basic components of the Raspberry Pi and how they relate to a traditional computer.

We will discuss the general nature of computation and how the same computer can be programmed to simultaneously do many different things, from word processing to music synthesis. Finally, we will introduce the most basic principle of programming: a program as a sequence of instructions.

LEARNING OBJECTIVES

- Know the basic architectures of a computing device.
- Understand the difference between hardware and software.
- Be able to set up a Raspberry Pi, turn it on, load the graphical user interface, and navigate the desktop for the first time.

LEARNING OUTCOMES

All students are able to:

- Plug the components of a Raspberry Pi together.
- Understand that computers are general-purpose devices, and that not every computer obviously resembles one.
- Identify the basic architecture of a computer: processor, storage, and input/output.

Most students are able to:

- Set up a Raspberry Pi for the first time, log in, and load the graphical user interface.

- Identify different types of computers and explain what makes them a computer.
- Understand basic architecture of a computer: processor, storage, and input/output.

Some students are able to:

- Set up a Raspberry Pi, log in, and load the graphical user interface without assistance.
- Explain, with examples, the similarities and differences of a Raspberry Pi compared with a personal computer.

LESSON SUMMARY

- An introduction to the basic physical parts of a Raspberry Pi
- An introduction to two types of computer interface:
  - command line
  - graphical

STARTER

Distribute the computing device cards to pairs of students. Ask them to match the device to the description. Then ask students to create two piles: one for devices that they think are a type of computer, and one for devices they do not think are types of computers.

After a few minutes discuss the outcomes of this task with the class. Note that all the cards are types of computing devices! Draw on students answers to discuss what makes a computer.

MAIN DEVELOPMENT

1. Watch the official 'What is a Raspberry Pi?' animation.

   The animation is available on Vimeo and YouTube

2. Start with all the parts of the Raspberry Pi on a table:
   - keyboard

- mouse
- SD memory card
- power supply
- monitor
- monitor cable
- Raspberry Pi

Ask the class to name and describe each component as you connect it to the Raspberry Pi in front of them.

Explain that these components are **hardware**. Hardware refers to the physical elements of the computer that you can see and touch. This includes what is sometimes hidden inside the case.

Finally, plug in the power and watch it boot up. An alternative demonstration would be to leave out the memory card and attempt to boot the Pi, which will fail. You can then describe the memory card as something that contains instructions to tell the Raspberry Pi how to start.

3. Demonstrate that the Raspberry Pi is a **standard** computer by opening up some applications and closing them again. If you are able to connect the Raspberry Pi via a network connection, then open up a web browser and surf to several different sites.

   Explain that this is software. Software is the term given to programs that run on the computer system and make the hardware work. Software has many uses, such as making a calculation or organising files. There are two main types of software: system software which runs and manages your computer, and application software which performs a specific task or function.

4. Distribute equipment to students and ask them to set up their own Raspberry Pis. Distribute the power supplies last, checking that students have connected their cables and SD cards correctly before they are powered up.

5. Ask students to log in to their Pis for the first time using the following login information:

```
Login: pi
password: raspberry
```

   Note that students will not see any text when typing the password but assure them it is working. Why do they think this might be the case? *Hint: what might happen if someone was looking over their shoulder?*

   If you are uisng the latest up to date software then you should boot straight to the desktop environment or **Graphical User Interface** If you are using older software then they will need to load

the GUI by typing 'startx'. Once logged in, explain to the students that they can give instructions to the Raspberry Pi using the **command line interface** instead of the GUI.

6. Ask them to identify any parts that they recognise such as the desktop, task bar, menu system, mouse pointer, icons, etc. Ask students to load a `Terminal` window by clicking on **Menu**, **Accessories** and **Terminal**. This is what the **command line interface** looks like. Ask students to try different commands like `ls` to list files and directories and 'cd' to change between directories.

7. As an extension task, ask students to compare a Raspberry Pi to a desktop computer. What are the similarities? What are the differences? In what situations could you use a Raspberry Pi instead of a desktop computer? (e.g. in a weather station)

PLENARY

Students are to label a Raspberry Pi to include:

- all inputs (and where they connect to the Pi)
- all outputs (and where they connect to the Pi)
- processor
- storage (i.e. where the SD card goes)
- power.

This could be completed with sticky notes, a hand drawn diagram on paper, or on a computer using shapes and call out boxes.

NEVADA STATE LIBRARY, ARCHIVES and PUBLIC RECORDS

Nevada Department of Administration
100 North Stewart Street
Carson City, NV 89701

Federal 2016 LSTA GRANT-IN-AID AWARD

SUB-GRANTEE:
Name & Address: Carson City Library

900 N. Roop Street, Carson City, NV 89701-3101

DUNS Number 073787152

PROJECT TITLE: Mobile MakerSpace

PROJECT NO: 2016 - 05 P/P # or CFDA NO: 45310-16

SUB AWARD PROJECT DATES: July 1, 2016 – June 30, 2017

General

I. Grant funded activities shall provide services and equipment as outlined in the approved grant application. Grant funds must be used to meet NSLAPR Five Year Plan and federal LSTA goals. The approved grant application submitted by the sub-grantee becomes part of this agreement.

II. The sub-grantee may not obligate or encumber grant funds prior the effective date of this agreement. Funds may not be obligated or encumber after June 30, 2017.

III. All unexpended grant funds must be returned to the Nevada State Library, Archives and Public Records

Grant Amounts and Reimbursement Procedures

I. Total Amount of Federal funds obligated for this project: $30,197.00

II. The sub-grantee must request payments as reimbursement of actual funds expended for the normal grant cycle. Advance payments may be requested under special circumstances and must be authorized by the LSTA Coordinator and NSLAPR Administrator prior to a payment request.

III. The sub-grantee may not obligate or encumber grant funds before the effective date of this agreement or after June 30, 2017.

IV. Funds for the grant project are authorized according to the final application budget (attached).

Request for Fiscal and/or Programmatic Changes

The sub-grantee may request a budget and/or program amendments for fiscal or programmatic changes as outlined below. Sub-grantee must submit a request for the budget or program change in writing to NSLAPR. All requests for changes must be received on or before May 5, 2017. Requests received after that date will be considered on a case by case basis. The revision must be submitted before obligating or expending grant funds.

I. Fiscal Changes must have a Budget Revision for any of the following conditions:
   a. Transfers of grant funds among budget categories that exceed ten (10) percent of a budget category:
   b. A transfer of funds into a budget category that currently equals zero ($0);
   c. A change in the items listed in the approved budget categories if an item's cost or features are substantially different from the approved grant application specifications.

II. Programmatic changes to the approved grant application must be submitted for a change in scope or objectives of the approved program, even if there is no associated budget revision. A change in scope is a substantive difference in the approach or method used to reach program objectives.

Reporting Requirements

The sub-grantee is responsible for submitting periodic reports that reflect the sub-grantee's level of performance for the approved grant application.

Fiscal reports will be due on the following

Reporting period	Due date
First quarter, July 1, 2016 – Sept 30, 2016	Oct 14, 2016
Second quarter, Oct 1, 2016 – Dec 31, 2016	Jan 13, 2017
Third quarter, Jan 1, 2017 – Mar 31, 2017	Apr 14, 2017
Fourth quarter, Apr 1, 2017 – June 30, 2017	July 14, 2017
Final fiscal report	Oct 2, 2017

The six month/midyear programmatic report will be due January 13, 2017.
The final summary evaluation report will be due October 2, 2017.

Assurances and Conditions

I. The sub-grantee will complete and sign all required certifications and assurances.

II. The sub-grantee agrees to maintain all financial and programmatic records, supporting documents and other records relating to this grant award for three (3) years after the last State Program Report for the Nevada LSTA State Plan 2013 - 2017, to be submitted on December 31, 2018. The sub-grantee will maintain their records through December 31, 2021.

III. The sub-grantee accepts NSLAPR, the Nevada Division of Audits, the Legislative Counsel Bureau and the Institute of Museum and Library Services any duly authorized representative, shall have access to any books, documents, papers and all records of information determined to be necessary to conduct an audit for funds expended under the terms and conditions of this sub-grant.

IV. This grant may be terminated by written notice and mutual agreement of both parties.

V. Termination for Non-Appropriation: The continuation of this grant is subject to and contingent upon sufficient funds being appropriated, budgeted, and otherwise made available by federal sources. Reservation of funds based upon budget reductions is included herein. The granting authority may reduce or terminate this grant, and the grantee waives any and all claim(s) for damages, effective immediately upon receipt of written notice (or any date specified therein) if for any reason the granting agency's funding from federal sources is not appropriated or is withdrawn, limited, or impaired.

Name of Federal awarding agency: Institute of Museum and Library Services	
Name of recipient: Nevada State Library, Archives and Public Records, Nevada Department of Administration	
Recipient Unique Entity Identifier: 946481140	
CFDA Name: LSTA State Grants	CFDA Number: 45.310
Federal Award ID Number (FAIN): LS-00-16-0029-16	Federal Award Date: February 08, 2016
Total Amount of Federal Award: $ 1,760,954	Research & Development: No
Period of Performance Start Date : Oct 1, 2015 Period of Performance End Date: Sept 30, 2017	Indirect Cost Rate: 0.0

Contact Information
Question or concerns about an LSTA project should be directed to:

LSTA Coordinator
Nevada State Library, Archives and Public Records
(775) 684-3407//Fax (775) 684-3344
E-mail: dalexander@admin.nv.gov

Required Signatures:

State Library, Archives, and Public Records Acting Administrator	Jeffrey Kintop	5-31-16 Date
Sub-grantee Authorized Official		5/6/16 Date
Sena Loyd Printed Name and Title		

Makerspaces

Scenario

Jerry, a freshman in fine arts at a private college renowned for its cross-disciplinary curriculum, is new to the campus makerspace. He's here to work on his first assignment in a course called "On the Corner of Art and Technology." Jerry's assignment is to build a portion of a pinball machine using any medium: cardboard, plastic, felt, clay. The finished product must react to a rolling ball in an appropriate manner. Before he takes a seat at one of the tables, Jerry pokes through labeled Plexiglas bins with arduinos, Legos, Tesla coils, cardboard, rockets, yarn, LED lights, duct tape, batteries, and solar receptors. He's looking for ideas for his project. One bin in a row of art supplies even has a selection of tiny silk flowers. He takes a few of these.

Other students are working on projects, alone or in groups. Some are talking quietly. Jerry takes some construction paper from one of the supply stations on the counter and notes the signs that point to a laser cutter, a laminating machine, and a 3D printer. He sets to work with the orange construction paper, figuring he'll use a stronger material once he has his design worked out. The chute he is building should cause his tiny flower arrangement to pop up as a ball passes over the trigger. But when he tests his first attempt, he finds a Ping-Pong ball lacks the mass to trigger the reaction.

A student named Carrie is sitting across from him. She's in the same class and is building a clay structure. She's using a golf ball to test and suggests Jerry try it. The heavier ball rolls over the side of the track before it reaches the trigger, but a plastic ball he makes with the 3D Printer does cause the bouquet to bounce up and off the flimsy track. Jerry disassembles his paper construction, thinking to use it as a pattern for a cardboard version. A glance at the clock alerts him that he's been here for two hours. He'll have to hurry to get to his psychology class.

At the door, he checks the schedule for open hours at the makerspace. As he moves hastily down the sidewalk to the next building, he ponders a design change. Maybe if the cardboard mockup works, he should build his final version in plaster of Paris. He could paint it with Bavarian motifs and add two men in lederhosen at a beer garden table that flies up on one hinged side as the ball passes...

1 What is it?

A makerspace is a physical location where people gather to share resources and knowledge, work on projects, network, and build. Makerspaces provide tools and space in a community environment—a library, community center, private organization, or campus. Expert advisors may be available some of the time, but often novices get help from other users. The makerspace—sometimes referred to as a hackerspace—is often associated with fields such as engineering, computer science, and graphic design. The concept emerges from the technology-driven "maker culture," associated with *Make* magazine and the Maker Faires it promotes. This idea of a collaborative studio space for creative endeavors has caught hold in education, where the informal combination of lab, shop, and conference room form a compelling argument for learning through hands-on exploration. On campus, the makerspace is being embraced by the arts as well as the sciences, and a new energy is building around multidisciplinary collaborative efforts.

2 How does it work?

Makerspaces owe a considerable debt to the hacker culture that inspired them, and **many are still primarily places for technological experimentation, hardware development, and idea prototyping**. But self-directed individual inventors and creative teams are increasingly using these free or fee-based services in fields other than engineering and technology. Makerspaces are often open for informal, unscheduled activity; in some cases, an organization will host scheduled classes in a makerspace. These classes are generally not for credit and focus on a single skill, such as coding, soldering, or woodcarving. Supplies such as cardboard, plastic, metal, gears, wood, and batteries may be on hand, and available tools may include anything from a welding machine to a laser cutter. But certain materials and tools are emblematic of makerspaces, such as microcontrollers called arduinos and 3D printers, valuable for fast prototyping. As the notion of providing space for project design and construction has caught on in education, such places have acquired other accoutrements, from paints and easels and impromptu stage sets to cooktops and candy molds. Used by students, faculty, and staff, makerspaces have become arenas for informal, project-driven, self-directed learning, providing workspace to tinker, try out solutions, and hear input from colleagues with similar interests.

Makerspaces

3 Who's doing it?

The makerspace emerged initially as a powerful learning force in the nonacademic community. One member-supported effort that reflects that origin is the Milwaukee Makerspace, which invites the public to attend meetings. Members see sharing and learning skills as a key purpose of their makerspace, resulting in a dynamic studio environment that builds member projects, which have included electronic modifications to musical instruments, mini robots, giant wind chimes, a biodiesel reactor, and an electric car. Colleges and universities have also been quick to recognize the value of the makerspace as a learning opportunity, with such options as the ThinkLab at the University of Mary Washington, Headquarters at Rutgers University, and the FabLab at Stanford University. At Case Western Reserve University, the current ThinkBox invention center is seen as so important that it will soon expand to a seven-story building with 50,000 square feet of space. All these spaces function similarly. At Wheaton College, for example, the WHALE Lab (Wheaton Autonomous Learning Lab) is an interdisciplinary makerspace where students embroider, solder, weld, sculpt, or otherwise design and manufacture creative projects. The emphasis is on community-provided mutual assistance, and the output from student activity might be a robot or a knitted sweater that lights up. At the Georgia Tech Invention Studio, students can even apply for project funding in the form of Maker Grants. Multidisciplinary projects are encouraged, and winning teams must work on their projects at the Invention Studio. Completed projects are presented as portfolio pieces at the Georgia Tech Capstone Expo.

4 Why is it significant?

Makerspaces are zones of self-directed learning. Their hands-on character, coupled with the tools and raw materials that support invention, provide the ultimate workshop for the tinkerer and the perfect educational space for individuals who learn best by doing. Interaction among inventors at these facilities fosters a highly collaborative learning dynamic that is excellent for team efforts and for peer support, advice, and assistance. Where these spaces are open to use by faculty, students, and staff from a cross-section of content areas, they promote multidisciplinary thinking and learning, enriching the projects that are built there and the value of the makerspace as an educational venue.

5 What are the downsides?

Space in learning facilities is often at a premium, and cost is a consideration in setting up an area for making. High-end 3D printers that print with a variety of media can be expensive. Smaller, more affordable 3D printers generally create only small items, often from a single medium in only one color. Equipment such as milling machines, welding equipment, lathes, 3D printers, and laser cutters may be in high demand, which can result in long wait times for students trying to use these facilities. Some of these machines can be dangerous, too, raising liability issues. Finally, much of the value of a makerspace lies in its informal character and its appeal to the spirit of invention, and some of this advantage can be negated if well-meaning faculty choreograph student activity to a degree that squelches experimentation.

6 Where is it going?

One key demand of a makerspace is that it exist as a physical location where participants have room and opportunity for hands-on work, but as these environments evolve, we may see more virtual participation. Video may invite input from remote experts, and teleoperation may enable manipulation of machinery from afar. As makerspaces have become more common on campuses and have found their place in public libraries and community centers, their influence has spread to other disciplines and may one day be embraced across the curriculum. **Eventually makerspaces may become linked from campus to campus, encouraging joint project collaboration.** Students who use these studios to create tangible portfolio pieces may find their work of interest to future employers. As education assessment evolves, the project work done in makerspaces may one day be accepted and reviewed for college credit in lieu of more conventional coursework.

7 What are the implications for teaching and learning?

The makerspace gives room and materials for physical learning. Because these spaces can easily be cross-disciplinary, students in many fields can use them, often finding technical help for work they are undertaking in their areas. At the same time, those in engineering and technology will find their work enriched by contributions from those in other fields. **Makerspaces allow students to take control of their own learning** as they take ownership of projects they have not just designed but defined. At the same time, students often appreciate the hands-on use of emerging technologies and a comfortable acquaintance with the kind of experimentation that leads to a completed project. Where makerspaces exist on campus, they provide a physical laboratory for inquiry-based learning.